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METCALF (Maynard M.). **Parasites and the Aid they give in Problems of Taxonomy, Geographical Distribution, and Paleogeography.**—*Smithsonian Miscellaneous Collections.* 1929. Feb. 28. Vol. 81. No. 8. 36 pp. With 4 text figs. [3 pages of refs.]

This interesting paper, which every entrant on parasitology should read, explains, by abundant illustrations, how the parasitologist who takes joy in his work may participate with good effect in those more inspiriting branches of natural science that deal with the origin and lineage of species, the present and past geographical distribution of animals and plants, and the ever-changing shape of continent and ocean in bygone ages of the Earth.

In his introductory illustration the author shows how from a study of the Opalinid parasites of the rectum of frogs one must infer that the Leptodactyline frogs of S. America and Australia are one kindred, which got its peculiar Opalinids (Zelleriella) from a common southern source. In the absence of any existing land connexion between S. America and Australia, one must fall back upon the stretch of land (Antarctica) which is supposed, on good palaeontological evidence, to have connected Patagonia and Australia in the Tertiary period. [The author, of course, gives the argument in full detail].

A. Alcock.

NAJERA (Luis). Estadistica del laboratorio de la Hipnoseria (Santa Isabel de Fernando Póo). [**Laboratory Statistics of the Santa Isabel Hospital, Fernando Po.**]—*Medicina Páises Cálidos.* Madrid. 1929. Mar. Vol. 2. No. 2. pp. 139–146. With 2 figs.

Of 1,303 patients who continued in hospital for trypanosome infection during the last six months of 1928, 590 (45·28 per cent.) showed malaria parasites (not differentiated); 320 also had *F. bancrofti* embryos (not included in the tables). *Loa loa* and *F. perstans* also were met with. Of 566 with trypanosomes 200 (35·33 per cent.) showed both plasmodia (15) and microfilariae (334); only 17 trypanosomes alone. Of 339 with filaria embryos only, 295 were *perstans*, 15 *Loa loa*, and 29 both. Of 340 patients examined, 230, or 67·64 per cent., had hookworms in the faeces. Both Ancylostoma and Necator were met with, the former predominating, and among them were 156 with Trichocephalus, 111 with Ascaris, 19 with amoebae (not identified) and 7 with *Schistosoma mansoni*).

H. Harold Scott.

(5250) P6/18 1,750 10/29 H & Sp Gp 52

CURSON (H. H.). **Metazoan Parasites from Zululand.**—*South African Jl. Natural History.* Pretoria. 1928. Apr. Vol. 6. No. 3. pp. 181–187. [3 refs.]

This is a bare list, without any specific descriptions or diagnoses, of 135 species of parasites identified in connexion with studies of nagana by the Veterinary Department of Zululand. The term "parasite" is here employed in the loosest sense, since it includes gadflies and houseflies. The list comprises 17 Tabanidae, 2 Hippoboscidae, 16 Muscidae, 4 Oestridae, 1 Cimex, 6 fleas, 5 Bloodsucking lice, 9 Mallophaga, and 22 ticks—also 2 Trematodes, 6 Cestodes, and 45 Nematodes. In the case of the true parasites, the names of the respective hosts are appended. [With the exception of the common bed-bug and *Pulex irritans*, no Arthropod parasites of man occur in this list.]

A. A.

FAUST (Ernest Carroll) & KELLOGG (Claude R.). **Parasitic Infections in the Foochow Area, Fukien Province, China.**—*Jl. Trop. Med. & Hyg.* 1929. Apr. 15. Vol. 32. No. 8. pp. 105–110. [8 refs.]

This survey shows that the amount of infection with intestinal parasites in the Foochow area (Fukien Province, South China) is surprisingly small in comparison with Central and North China; moreover, the intestinal protozoan infections of the various animals that might serve as reservoir or as intermediate host of human infections were not found to be closely related to the human protozoa. The author emphasizes the following facts elicited by the survey.

"(1) The small number of species and low incidence of intestinal protozoa.

"(2) The uniformly heavy infection with ascaris and to a somewhat lesser degree of trichuris.

"(3) The low (subclinical) incidence of hookworm infection in the area, except in the Hak Ka villages near Foochow, where a heavy infection of apparently pure *A. duodenale* was encountered.

"(4) The absence of taenia, echinococcus, hymenolepis and dipylidium infection in the human population; the occasional presence of *S. mansoni* in man and the possibility of human infection with the adult *Diphyllobothrium*, due to the high infectivity of the intermediate hosts commonly consumed as food without sufficient heating.

"(5) The incidental infection with *S. japonicum* and *F. buski* in the vicinity of Foochow.

"(6) The complete absence of clonorchis infection in man and in dogs and its low percentage of infectivity in cats."

A. A.

FAUST (E. C.). **Report for the Parasitology Diagnostic Laboratory of the Peking Union Medical College Hospital for the Year 1927-1928.**—*China Med. Jl.* 1928. Nov. Vol. 42. No. 11. pp. 823–826.

——. **Human Intestinal Parasites in North China.**—*Amer. Jl. Hyg.* 1929. Mar. Vol. 9. No. 2. pp. 505–508. [Peking Union Med. College, Peking & Dept. of Trop. Med., Tulane Univ., New Orleans.]

This valuable record shows in tabulated form the incidence of intestinal protozoa and helminth infections diagnosed in the parasitology laboratory of the Peking Union Medical College Hospital from October 1st, 1924,

to April 30th, 1928. It is the outcome of 41,742 examinations from 13,617 cases, and thus may be regarded as a fair index of the intestinal parasites of North China.

The specific protozoa determined for the whole term of $3\frac{7}{12}$ years, corrected to six examinations and stated as percentage, are *Entamoeba histolytica*, 20·3; *E. coli*, 16·6; *Endolimax nana*, 28·0; "*Councilmania lafleuri*" (?), 7·6; *Iodamoeba buetschlii*, 6·6; *Dientamoeba fragilis* (2 cases), 0·014; *Trichomonas hominis*, 3·54; Pentatrichomonas, 0·14; *Chilomastix mesnili*, 4·7; *Giardia lamblia*, 6·7; *Isospora hominis* (3 cases), 0·022.

The specific helminth infections determined for the whole term and stated as percentage are, *Ascaris lumbricoides*, 33·4; Ancylostoma or Necator (1), 5·3; *Trichocephalus trichiurus*, 4·7; *Enterobius vermicularis*, 0·15; *Trichostrongylus orientalis*, 0·029; *Strongyloides stercoralis*, 0·037; Taenia spp. (intestinal), 0·57; somatic *Cysticercus cellulosae*, 0·015; *Echinococcus granulosus*, 0·051; *Hymenolepis nana*, 0·38, *Hymenolepis diminuta*, 0·007; *Clonorchis sinensis*, 0·62 (all exogenous); *Schistosoma japonicum*, 0·022; *Paragonimus westermani*, 0·007; *Fasciolopsis buski*, 0·066 (all exogenous).

A careful attempt was made to diagnose "*Councilmania lafleuri*" by cytoplasmic and nuclear features. "Examination of the yearly totals shows a successive decrease in positive findings of "*C. lafleuri*" and a corresponding increase in positive cases of '*E. coli*'," although "the technical staff was essentially the same over the entire period and no one was consciously prejudiced one way or another.

A. A.

DE RIVAS (Damaso) & FIFE (Charles A.). **Intestinal Parasitism in Philadelphia.**—*Jl. Amer. Med. Assoc.* 1929. Feb. 23. Vol. 92. No. 8. pp. 624–627. [1 ref.] [Dept. of Parasit., Univ., Pennsylvania.]

The authors realize the value outside the actual tropical environment of the laboratory methods now freely used in the diagnosis of disease in tropical hospitals and countries only, and they here emphasize the general necessity in the diagnosis of gastro-intestinal disorder, of a routine investigation of the faeces. Their argument is based chiefly on the information obtained in Philadelphia from their microscopical examination of the faeces of 823 hospital patients of all ages, and 312 other patients. Among the 823, Giardia was found in 29, amoebae in 22, Chilomastix in 3, and Trichomonas in 1, besides a few cases of very common worms. Among the 312, amoebae were found in 63, Giardia in 25, Trichomonas in 1, Chilomastix in 1, and hookworm in 1, besides a few cases of common worms.

A. A.

ANGEL MARÍN (Rafael). **Diarrhea and Enteritis in Porto Rico. IV. Relation to Parasitic Infestations.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Nov. Vol. 4. No. 5. pp. 221-226. [8 refs.] [School of Trop. Med., Univ., Porto Rico.]

This is a study of the relation between intestinal parasitism and co-existent diarrhoea and enteritis in Porto Rico, where gastro-intestinal maladies contribute so largely to the mortality rate. A hundred and three persons were investigated, of whom 53 were cases of diarrhoea

(mostly chronic) collected from 14 municipalities and in all classes of society, and of ages ranging from 3 months to 76 years; and 50 were healthy "controls," being as comprehensively chosen as possible, but quite free from gastro-intestinal trouble. In respect of infestation by animal parasites there was no great difference between the gastro-intestinal cases and the controls, as is shown below. In respect of co-existent diarrhoea and enteritis, "in only 7 of the 53 cases could the condition be explained by the presence of an animal parasite." The author's conclusion is that intestinal parasitism (animal) does not explain the high morbidity debited to diarrhoea and enteritis, in Porto Rico.

TABLE SHOWING COMPARATIVE INFESTATION.

	Trichuris trichiura.	Hookworm.	*Ascaris lumbricoides.*	*Strongyloides stercoralis.*	*Schistosoma mansoni.*	*Entamoeba coli.*	*Iodamoeba williamsi.*	*Entamoeba histolytica.*	*Endolimax nana.*	*Giardia lamblia.*	*Trichomonas hominis.*	*Chilomastix mesnili.*	*Balantidium coli.*
Diarrhoea group, 53 cases	13	7	1	3	4	6	2	5	2	8	2	1	1
Control group, 50 cases ...	24	14	8	1	1	11	3	7	4	3	1	1	0

A. A.

QUINTINI (J.). Contribución a la geografia médica del Ferrocarril de Santa Bárbara a El Vigia, en los estados Zulia y Mérida. Notas preliminares. [**Preliminary Notes on the Medical Geography of a Railway in the States of Zulia and Merida (Caracas).**]—*Gac. Med. de Caracas.* 1928. Apr. 30 & May 15. Vol. 35. Nos. 8 & 9. pp. 122–126; 130–134.

Much of this paper consists of general remarks regarding the natural features of the country, the climate, the heterogeneous inhabitants and their occupations and habits, and of detail regarding the sanitary state of the railway. Anopheles and paludism, of course, are mentioned, but the points emphasized in the notes on the pathology of the region are enteric fever, bacillary dysentery, and the remarkable prevalence of intestinal parasites. Hardly a year passes without an epidemic of enteric fever. Of 207 analyses of faeces made in the course of 22 months, 190 were positive for intestinal parasites, multiple infections being common. The parasites (and respective percentages) observed were Trichiuris in 85·0, *Ascaris lumbricoides* in 44·0, Necator in 20·0, "Amoeba dysenterica" in 16·0, "Cercomonas" in 12·0, *Balantidium coli* in 10·0, and Taenia and Lamblia each in 1·0.

A. A.

BERGMAN (Adolfo), BREYTER (A.) & BARG (I.). Parasitosis intestinal entre los israelitas (askenasim) en la República Argentina. [**Intestinal Parasites among Jews in the Argentine.**]—*Arch. Argentinos Enferm. Aparato Digest. y Nutric.* Buenos Aires. 1929. Vol. 4. No. 3. pp. 417–436. With 31 diagrams.

Of 335 individuals examined 151 (45·07 per cent.) were found infected with parasites of one kind or other. 215 of the total were

women, and of them 45·56 per cent. were infected ; of 120 men 44·16 per cent. The order of frequency was : Blastocystis, 55 per cent of the. women, 37 per cent. of the men ; *E. coli* 17·5 and 22·84 per cent. respectively ; Trichuris 20 and 37·14 per cent. ; *Giardia intestinalis* 3·75 and 8·57 per cent. ; *E. histolytica* 2·5 and 5·7 per cent. The heaviest infection was found in the fifth decade, in Europeans more than Argentines (54·84 to 26·6 per cent.), and generally it was found that the parasitism decreased with length of residence.

H. Harold Scott.

BACCHELLI (Giulio). Il metodo Noguchi-Tilden nella fissazione e conservazione dei più vari protozoi ed elminti. [**The Noguchi-Tilden Method for fixing and preserving Protozoa and Helminths.**]—*Arch. Ital. Sci. Med. Colon.* 1927. June. Vol. 8. No. 6. pp. 330–335. [2 refs.] [Inst. of Trop. Path., Univ., Bologna.]

The Noguchi-Tilden fluid is composed of N/15 Disodium phosphate 88 parts, N/15 Monopotassium phosphate 12 parts. To every 9 parts of this is added one part of commercial formalin, immediately before use. For efficient fixation at least 10 minutes' exposure is needed.

The author claims that it acts also as a clarifying agent and is good for all protozoa and serves for preserving helminth ova without distortion.

H. Harold Scott.

DE RIVAS (Damaso). **Intestinal Parasitism simulating Appendicitis.** —*Jl. Amer. Med. Assoc.* 1929. Apr. 6. Vol. 92. No. 14. pp. 1168–1171. With 9 text figs. [3 refs.] [School of Med., Univ. of Pennsylvania, Philadelphia.]

The author considers the facts that various intestinal parasites (both worms and protozoa) may not only originate symptoms resembling those caused by disease of the appendix, but also may be, and frequently are, the actual cause of subacute and chronic typhlitis and appendicitis. He therefore lays stress upon the duty of the surgeon, when confronted with all but those acute cases of appendicitis where immediate operation is imperative, to examine the faeces, to use the proctoscope, and to look for eosinophilia. He quotes Sir Leonard ROGERS' remarks on the considerable proportion of chronic dysentery patients, invalided from India, who come before the Medical Board of the India Office with a history of appendix removal without lasting benefit.

A. A.

CAMERON (Thomas W. M.). **The Importance of Parasitology in Tropical Lands.**—*Vet. Rec.* 1929. Apr. 13. Vol. 9. No. 15. pp. 299–301.

An address delivered in Trinidad to the local Science Club. It does not contain anything new, but is a perspicacious review of the history of modern developments of tropical pathology, beginning with MANSON'S discovery of the essential part played by the mosquito in the transmission of filariasis.

A. A.

CAWSTON (F. G.). **The Resistence of Limnaeidae to Desiccation.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Jan. 30. Vol. 22. No. 4. pp. 335–338. [7 refs.]

The author notes the well-known ability of pond-snails to survive the dry or the cold seasons by burying themselves in the mud ; in S. Africa Limnaea and Planorbis appear with the first signs of spring in ponds that had been baked for 2 months and then frozen for several months more. He notes that Limnaea prefers light and Planorbis darkness. In his desiccation experiments *Planorbis spirorbis* holds the record with a resistance of 4 months. In his burial experiments in garden soil *Limnaea natalensis* soon died at a depth of 12 inches, *Physopsis africana* survived at least 12 days at 2 inches, but succumbed after 25 days, *P. pfeifferi* lived at least 30 days at 12 inches, as also did *Bulinus tropicus* ; under natural conditions, buried in moist mud, the terms of survival might be longer. But because of this ability to survive deprivation of water the policy of temporarily draining pools in order to destroy pond-snails infected with schistosomes is only of limited value.

In the author's experience dense growth of the water-hyacinth (*Eichhornia crassipes*), by choking and finally expunging collections of stagnant water in the Durban suburbs, has been a very evident deterrent to *Physopsis africana* (a common carrier of three Natal schistosomes) and also, incidentally, to the practice of bathing in infected pools.

A. A.

LIGHT (S. F.) & SANFORD (Mary F.). **Experimental Transfaunation of Termites.**—*Univ. California Public. Zool.* 1928, July 18. Vol. 31. No. 12. pp. 269–274. With 2 text figs. [3 refs.]

This paper describes the methods by which the experimental study of the protozoon fauna of termites is pursued. In this particular experimental study it is shown that the protozoa of one species of termite can live for at least several months within the gut of a widely different species of termite. [For other references to this fascinating subject—the symbiosis of termites and protozoa—see this *Bulletin*, Vol. 21, pp. 159, 774, 790 ; Vol. 22, pp. 835, 836, and Vol. 25, p. 835].

A. A.

PAWLOWSKY (E. N.). Die Giftigkeit im Tierreich und die Gift produzierenden Organe. [**Venoms and their Organogeny in the Animal Kingdom.**]—*Seuchenbekämpfung.* Vienna. 1929. Vol. 6. No. 1. pp. 40–48.

This interesting compilation is a sort of subject-index to the large and diversified science of venomous animals and the various modes and manifestations of their peculiar property. In his treatment of a subject that is hard to define comprehensively yet with precision, the author finds it convenient to put venomous animals in two categories according as their venoms are elaborated in definite organs and brought into action by an obvious mechanism, or are distributed in some tissue or the blood, where they have to be discovered by experiment ; and even this artifice has to allow for certain insects that might appear in

both companies. In respect of its contents the paper is a brief epitome of the author's large work *Gifttiere und ihre Giftigkeit*, which was reviewed in the *Bulletin*, Vol. 24, 1927, pp. 327–8.

A. A.

NEVEU-LEMAIRE (Maurice) & PELLEGRIN (Jacques). Essai d'ichthyologie médicale. Les poissons hôtes intermédiaires des helminthes parasites de l'homme. [**Medical Ichthyology.**]—*Ann. Parasit. Humaine et Comparée.* 1928. Apr. 1 & July 1. Vol. 6. Nos. 2 & 3. pp. 221–244; 343–367. With 18 text figs. [26 refs.] [Parasit. Lab., Faculty of Med., Paris.]

After a brief allusion to fishes that can inflict injury with envenomed spines or with poison-fangs, or with electric organs, and to fishes having poisonous flesh, the authors concentrate on the fishes—all Teleostei and chiefly freshwater species—that are the intermediate hosts of helminth parasites of man. Of these intermediate hosts the authors enumerate 57 species, distributed in 8 families, as follows: Salmonidae 8 species (including the trout, charr, and grayling), Esocidae 1 species (the common pike), Gadidae 1 species (the eel-pout), Percidae 2 species (the perch and the pope), all of which, except one Japanese Salmonid, are hosts of the plerocercoid larva of the ribbon-worm; Cyprinidae 41 species (including carps, barbels, roach, tench, etc.), Osphromenidae 1 species (the paradise-fish), Gobiidae 2 species, and Mugilidae 1 species (a grey mullet), almost all of which are hosts of encysted cercariae. The authors write as ichthyologists, giving the characters of the significant families and genera and species of fishes and supplying excellent text-figures for the recognition of the genera and species.

A. A.

HOFFMANN (W. H.) & EMBIL (Vicente A.). Observaciones sobre unos casos de ciguatera. [**Some Cases of Ciguatera.**]—Reprinted from *Rev. Med. y Cirug. de la Habana.* 1928. Year 33. Vol. 33. No. 18. p. 884.

Ciguatera is the name given to the result of poisoning by *Sphyraena picuda.* Within a few hours, about three as a rule, of ingestion of the fish the following symptoms appear: Abdominal pain, chills, vomiting, diarrhoea, cramps, general depression, pulse small, soft, easily compressible. The post-mortem findings in a dog and a cat were a congested gastric mucosa, ulcers in an early stage in the duodenum and jejunum (but *Dipylidium caninum* and Toxascaris were present), liver and kidneys swollen, and microscopically the cells were cloudy, and there were small interstitial haemorrhages in both organs and intracapsular in the latter. The authors regard the condition as a specific entity quite distinct from ptomaine or leucomaine poisoning.

H. Harold Scott.

GUDGER (E. W.) & BREDER, Jr. (C. M.). **The Barracuda (Sphyraena) Dangerous to Man.**—*Jl. Amer. Med. Assoc.* 1928. June 16. Vol. 90. No. 24. pp. 1938–1943. With 5 text figs. [4 refs.]

The barracudas (Sphyraenidae) are a family of savage and voracious pike-like fishes inhabiting tropical and sub-tropical seas and often

attaining a size large enough to be dangerous. The present paper, which is mainly a compilation from the senior author's monograph "Sphyraena Barracuda: its Morphology, Habits and History" (Publication 252, Papers Department Marine Biology, Carnegie Institute of Washington, 1918), contains a most interesting collection of well-authenicated stories of its attacks on man. The authors state that in the Mexican Gulf and Caribbean region the barracuda is regarded as more aggressive than the shark, and they themselves consider it to be of all sea-fishes the one most dangerous to man. Wounds made by a barracuda are straight cuts easy to distinguish from the wounds made by the curved jaws of the shark.

A. A.

IMAHASI (Tetuzô). [Ueber den Einfluss einiger Pharmaka auf die tödliche Vergiftung durch Tetrodotoxin.] [**On the Influence of Certain Drugs upon Lethal Poisoning by Tetrodon-Toxin.**]—*Okayama-Igakkai-Zasshi* (*Zent. d. Okayama Med. Gesellschaft*). 1928. Dec. Vol. 40. No. 12. pp. 2451–2463. [20 refs.] [In Japanese. German summary p. 2464.] [Pharmacol. Inst., Univ., Okoyama.]

[Tetrodon, certain tissues of which are toxic, is a genus of globe-fishes or parrot-fishes.]

The German summary states the results of pharmacological experiments, conducted on mice that had received lethal doses of tetrodon-toxin, both with drugs having a specific action either on the central or peripheral motor apparatus, and with substances like grape-sugar and alkalis that have no specific action; and that the following observations were made. Picrotoxin, physostigmin, guanadin and adrenalin augmented the toxic effect. Caffein, hexeton and coramin, and to a less extent cardiazol and grape-sugar, prolonged life. Lobelin, and even more effectively carbonate of soda, not only prolonged life further but also reduced the mortality among the mice. The alkali, it is noted, is chemically destructive of the toxin.

A. A.

BUTKA (H. E.). **Protozoal Infestations. A Group Study—Some Notes on Stovarsol Treatment.**—*California & Western Med.* 1929. Feb. Vol. 30. No. 2. pp. 87–92. [11 refs.]

Many writers, having observed Protozoa in the stools of patients suffering from various symptoms of ill-health, are content to assume, without exact inquiry, that the Protozoa are the exciting cause of the symptoms; and this has led to great argument, about it and about, but evermore coming and going by the same door. The present paper is more logical, its author having endeavoured in a group of patients observed under the same conditions, to eliminate the Protozoa by a course of stovarsol and to note any concomitant variations in symptoms.

Of a class of 75 medical students 38 were found to harbour one or more species of protozoa in their stools. (This percentage (50·6) was found to be more than three times as high as the infection observed in a series of hospital patients' stools examined in the course of two years, a difference which, as the author suggests, may perhaps be explained as a temporary result of "preparation for hospitalization.") The

protozoa observed were *Entamoeba histolytica*, *E. coli*, Councilmania, Iodamoeba, *Endolimax nana*, *Chilomastix mesnili*, *Giardia*, *Trichomonas hominis*, and other miscellanea.

Of the 38 infected students 33 appear to have reported; 6 of these reported "no symptoms"; the symptoms in the other 27 were diarrhoea 5, constipation 16, mucus in stool 3, blood in stool 1, gaseous distension 33, abdominal discomfort 22, tenderness along colon 9, arthritis 2, neuritis 5, acne 9, eye 9, "miscellaneous" 15.

Of the 33 students having symptoms 30 are stated to have been put under a definite course of treatment with stovarsol—a tablet of 0·25 gm. three times a day for a term of 12 days. The effects of the stovarsol were severe and 14 [?] of them did not complete the treatment, but 15 of them went right through with it. Of the 30 treated 10 reported disappearance of symptoms, 8 were symptoms improved, 9 no change, 1 worse, (no report 2). Final examinations of stools made from two to eight months after treatment showed that of the 15 students who completed the course only 2 still harboured parasites; and of the 14 who did not complete the course 7 still harboured them. Representatives of all the species of protozoa originally observed were found in the resistants' stools. This concomitant fall in the number of cases showing abatement and disappearance of intestinal infection and in the number of cases showing abatement and disappearance of symptoms as a result of treatment with a parasiticide drug, is certainly good evidence that chronic infestation by intestinal Protozoa may be pathogenous, although in this case it leaves the specific pathogeny undetermined.

A. A.

PHILPOTT (Charles H.). **Effect of Toxins and Venoms upon Protozoa.**—*Proc. Soc. Experim. Biol. & Med.* 1929. Mar. Vol. 26. No. 6. pp. 522–523. [2 refs.] [Med. School, Washington Univ., St. Louis, Mo., & Zool. Lab., Univ. of Missouri, Columbia.]

TUNNICLIFFE's consideration of Paramecium for use in determining the strength of antitoxins has suggested this study, to which *Paramecium caudatum* has lent itself well. The minimum dose, in 1 cc., of solvent, lethal to *P. caudatum* in 24 hours was (*a*) of rattlesnake (*Crotalus atrox*) venom, 0·00002 gm.; (*b*) of mocassin (*Ancistrodon piscivorus*) venom, 0·0000014 gm.; and (*c*) of fer-de-lance (*Lachesis atrox*) venom, 0·0000125 gm. Antivenenes neutralize Crotalus venom for Paramecium, so that Paramecium can be used in the titration of antivenenes. Paramecium can acquire immunity to venom in the usual way; in the course of 17 days the animalcules were able to "grow" in the presence of 3 lethal doses of Crotalus venom, but the resistance disappeared "after the race grew for 13 days" in venom-free media. The resistance was specific to Crotalus venom.

A. A.

KOFOID (Charles Atwood). **The Protozoa of the Human Mouth.**—*Jl. Parasit.* 1929. Mar. Vol. 15. No. 3. pp. 151–174. [57 refs.]

This is a monographic presidential address on the fauna of a microcosm—the world's wide mouth—a fauna consisting of two species of Protozoa, namely, *Entamoeba gingivalis* and *Trichomonas buccalis*, both of which have suffered wrong identifications and a plethora of names. Both seem to be very common in men's mouths; moreover, an amoeba

indistinguishable from *gingivalis* has been discovered by the author in monkeys, and *T. buccalis* is common in the dog. Their history, life-history, form and structure and reproduction, and their relation to pyorrhoea are considered in the fullest detail. A bibliography of 57 works by 55 different authors and joint-authors is appended.

A. A.

TALIAFERRO (William H.). **The Immunological Bases for Different Types of Infection by the Blood Protozoa. Chapter XLIX.**—Reprinted from *Newer Knowledge of Bacteriology & Immunology.* pp. 679–701. With 11 text figs. [70 refs.]

This is a résumé of the subject. The author gives first the methods that have been employed for analysing the effects of the host's resistance against the parasite and then outlines the course of certain trypanosome and malaria infections, the effect of the host's resistance upon the particular parasite, and the immunological basis for the effects. An ample bibliography is attached.

A. A.

BARROW (John V.). **Intestinal Protozoa. Their Relation to Certain Diseases—Diagnosis and Treatment.**—*California & Western Med.* 1928. Nov. Vol. 29. No. 5. pp. 303–308. [2 refs.]

The originality of this interesting paper is in its argument; not in its facts. The author thinks that—with the distinctive reservations (as we infer from the context rather than are explicitly informed) of *Entamoeba histolytica* and *Balantidium coli*—a heavy and continuous infestation with intestinal protozoa is the origin of a pathological process that is made manifest in the hospital by insidious intestinal disturbance and general malaise; in the laboratory by deficiencies of haemoglobin, red cells, polynuclears, and calcium; and in the region of surmise by a complete lack of vitamins. It is thus the weight and persistence of infestation, rather than any particular protozoon species, that determines the pathogenous process; and the clues to the pathogeny are to be sought in the domain of biochemistry rather than in the popular convocations of protozoology—to wit, in the effects of the absorption of noxious alien proteins. The person heavily infested with intestinal protozoa "is in the same status pathogenically as the carrier of diphtheria, typhoid, tuberculosis, syphilis, gonorrhoea, leprosy," etc. The general treatment should ensure healthy surroundings and nourishing food; and except milk and gruel (with rest in bed) in acute phases, no special diet is necessary. In the medical treatment a reasonable use of ipecacuanha and its derivatives takes the first place, and then (in the order stated) stovarsol, neoarsphenamin, bismuth, *Chaparro amargosa*, quinine, yatren (anayodin).

A. A.

PETERSON (Daggmar H.). **The Reactions of a Natural Protozoan Community to some Organic Acids.**—*Amer. Jl. Hyg.* 1928. Sept. Vol. 8. No. 5. pp. 741–758. With 4 text figs. [38 refs.]

The author has experimented with the Infusoria found in the Imhoff tanks of a sewage-disposal plant (*vide* LACKEY, Fauna of

Imhoff Tanks; New Jersey Agric. Expt. Sta. Bull., 1925). In the bacterial fermentations that go on in these tanks acetic, butyric, and lactic acids are produced, and the author shows, in detail and with precision, how certain bacteria multiply in media to which appropriate quantities of these acids are added, and furnish food for the ciliate, but apparently not for the flagellate, Infusoria.

A. A.

SILBERSTERN (Ernst). Ueber einen Fall von akuter Enteritis mit protozoärer Mischfauna und Vorherrschen von Limaxamöben im Stuhlbilde. [**A Case of Acute Enteritis with Endolimax predominating over other Protozoa in the Stools.**]—*Med. Klin.* 1929. Mar. 1. Vol. 25. No. 9 (1264). p. 348. [3 refs.]

The patient, a young man with a good history, on a mid-summer day, after a meal of meat and cucumber, felt uncomfortable, vomited, and had a watery stool. All night long he suffered from bellyache. When examined the abdomen was tender and flaccid, the transverse colon sensitive, and there was gurgling in the iliac region. In the stools were found active forms, and cysts of Endolimax, some flagellates—Bodo, *Chilomastix mesnili*, and *Trichomonas intestinalis*, and some Spirochaetes. Treatment by restricted diet, animal charcoal, and clysters of ¼ per cent. solution of tannin. On the 3rd day afterwards no protozoa were found; but on the 8th day many Endolimax cysts, which gradually disappeared after the patient's discharge on the 9th day.

A. A.

REGENDANZ (P.) & KIKUTH (W.). Ueber Aktivierung labiler Infektionen durch Entmilzung (*Piroplasma canis, Nuttallia brasiliensis, Bartonella opossum, Spirochaeta didelphydis*). [**Activation of Infections by Desplenation.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Dec. Vol. 32. No. 12. pp. 587–593. With 5 text figs. [14 refs.] [Inst. for Ship & Trop. Diseases, Hamburg.]

This is a short review and discussion, with numerous figures, illustrating the doctrine that the spleen is an indispensable centre for the production of antibodies in protozoon infections.

A. A.

DOBELL (Clifford). **Researches on the Intestinal Protozoa of Monkeys and Man. I. General Introduction, and II. Description of the Whole Life-History of** *Entamoeba histolytica* **in Cultures.**—*Parasitology.* 1928. Dec. Vol. 20. No. 4. pp. 357–412. With 2 text figs. & 99 figs. on 4 plates. [37 refs.] [National Inst. for Med. Research, Hampstead, London.]

After much interesting and relevant prolectic, and after describing in detail and in language "purged and snuffed from ambiguity" the source and history and the necessary manipulations of the several links in the chain of life that sustains the proof that the recorded facts of observation relate exclusively to a pure strain of *Entamoeba histolytica*, the author describes his observations of the development of that organism in cultures. These observations cannot be better summarized than in his own words.

"A pure strain of *Entamoeba histolytica* has been isolated and cultivated, and an attempt has been made to study and describe its whole life-history in detail.

"This strain (*K*.28 c) was derived from the dysenteric dejecta of a kitten experimentally infected *per os* by means of typical cysts from the faeces of a monkey (*Macacus sinicus*). It has now been under continuous cultivation for about 20 months (220 serial subcultures), and its development *in vitro* has been uniform throughout.

"Methods have been devised, and are here described, whereby any desired stage in the life-history of this strain—amoebae, cysts, and all intermediate stages (including encystation and excystation)—can be readily procured *in vitro* at will.

"Detailed study has shown that the trophic amoebae multiply in cultures by simple binary fission only, as they do in their natural hosts. Their mode of division is briefly described.

"Encystation also occurs *in vitro* just as it does in the bowel, with formation of characteristic precystic amoebae and the final production of typical quadrinucleate cysts.

"Excystation has been carefully studied, and it has been found that a single quadrinucleate amoeba escapes from each cyst through a minute perforation in its wall. An account is given of this remarkable process, which has not been described previously.

"The 4-nucleate excysted (metacystic) amoeba has been found to produce a new generation of trophic forms by a complicated series of nuclear and cytoplasmic divisions, which are described in detail for the first time. The final result of this subdivision is the production of eight uninucleate amoebulae by each quadrinucleate amoeba hatched from a cyst.

"These amoebulae are young trophic amoebae, and not gametes or conjugants. No sexual phenomena of any sort have been observed during the metacystic stages: and the life-history of *E. histolytica*, as visible *in vitro*, is thus wholly asexual.

"A development similar to that here described in the case of Strain *K*.28 c has been found to occur in many other cultivated strains of *E. histolytica*—including a strain isolated directly from man, and a human strain experimentally implanted in a monkey (*M. sinicus*) and recovered therefrom in pure culture. There are therefore good reasons for concluding that the development here described is not abnormal, and that it is probably closely parallel to that which occurs naturally inside man."

A. A.

REES (Charles). **The Infectivity and Pathogenicity of a Starch-fed Strain of** *Endamoeba histolytica*.—*Jl. Parasit.* 1928. Dec. Vol. 15. No. 2. pp. 131–134. [7 refs.] [School of Hyg. & Public Health, Johns Hopkins Univ., Baltimore, Md.]

The author considered the experiments reported by DOBELL and LAIDLAW, in which *Entamoeba histolytica* cultivated in Boeck and Drbohlav medium that had been enriched with starch failed, when injected *per anum*, to induce dysentery in kittens; he also considered the many failures of other workers in this field to infect kittens *per anum* with amoebae from liver-abscess; and he then thought it possible that these failures might be due, not to any loss of virulence, but to mere sluggishness of amoebae fed on starch or glycogen—by reason of which they were voided from the bowel before they could strike there. He therefore ligated the colon of some kittens and injected his starch cultures of *Entamoeba histolytica* through the bowel wall, so that no escape *per anum* was possible, and of 13 kittens so treated 7 became infected, the lesions in some cases being very severe. [The account of the cultures is not entirely clear, nor is the method of ligation of the colon or the duration of this obstruction yet described.]

A. A.

JUSTESEN (P. Th.). Morphologische waarnemingen aan amoeben van den mensch. [**Morphological Observations in Amoebae of Man.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Apr. 10. Vol. 69. No. 4. pp. 393–396. With 4 plates.

The author found two types of amoebae on the teeth. One, practically always present under the gums in cases of pyorrhoea alveolaris, has about the size of a leucocyte, showing a hyaline peripheral zone round a granulated central part, containing the nucleus, which is of the entamoeba type. The amoeba never takes the limax shape and rarely moves to any extent from its place.

The other type is found in the cavities in cases of caries of the teeth, but even more commonly on the roots of extracted teeth (sometimes without any affection of the crown). The author thinks that the amoeba must reach the teeth via the blood current. This type shows all the characteristics of the *Entamoeba histolytica*. The author observed that a part of the amoeba's body is more or less sticky, which is apparent from the layer of bacteriae and detritus always covering this place. He thinks that this part especially serves for the intake of food as well as for the excretion, which latter function he actually observed.

The possible pathogenic significance of these findings is briefly discussed.

W. J. Bais.

ALEXEIEFF (A.) & GWÉLÉSSIANY (J.). Sur le mécanisme de la spécificité parasitaire chez les *Trichomonas*. [**Mechanism of Parasitic Specificity in Trichomonas.**]—*C.R. Soc. Biol.* 1929. Feb. 8. Vol. 100. No. 5. pp. 314–316.

A Trichomonas (*T. batrachorum*) inhabits the rectum of the edible frog (*Rana esculenta*) and another Trichomonas (*T. augusta*) that of the toad (*Bufo vulgaris*), but although in spring-time the frog and the toad may be seen in the same pond, the Trichomonas of the one is never found in the rectum of the other, although *Opalina ranarum* and two other Protozoa are found in the rectum of both, and the rectal pH is the same in both. Experiments with frogs show that the rectum of the living frog possesses some local defence against the toad-trichomonads. For when the toad-trichomonads are injected into the living frog's rectum they disappear in 4 hours, and if the injection be again and again repeated (at intervals of several days) they still disappear ; but if after the injection of the toad-trichomonads the frog be killed (by destruction of the central nervous system) and its body kept cool, plenty of active toad-trichomonads are to be found in its rectum 24–25 hours afterwards. There is some evidence that the local rectal defence is phagocytic.

A. A.

DAVIS (Carl Henry) & COLWELL (Charlotte). *Trichomonas vaginalis*, **Donné: Preliminary Report on an Experimental and Clinical Study.**—*Jl. Amer. Med. Assoc.* 1929. Jan. 26. Vol. 92. No. 4. pp. 306–308. [8 refs.]

The authors take a serious view of *Trichomonas vaginalis* as a cause of leucorrhoea. They do not agree with those who, to explain its presence in the vagina, assume that it is identical with *T. hominis* (=*intestinalis*) ; and they could not grow it in a medium well approved

for the latter species. They succeeded, however, with Locke's solution containing either 5 per cent. of human blood or (to avoid obscurative blood cells) 5 per cent. of human serum. The best medium, they find, is dextrose broth with 5 per cent. of human serum; in this a heavy growth occurs in 24 hours.

In the treatment of the leucorrhoea, whatever the means used, the entire vaginal mucosa must be reached and the treatment must be persisted in until all the flagellates and all pus and blood have disappeared.

A. A.

YUAN-PO (Li). Culture de *Chilomastix aulastomi*. [**Cultivation of** *C. aulastomi*.]—*Ann. Parasit. Humaine et Comparée.* 1929. Jan. 1. Vol. 7. No. 1. pp. 61–63. With 1 text fig. [3 refs.] [Parasit. Lab., Faculty of Med., Paris.]

Nearly every individual *Aulastomum gulo* [a horse-leech] taken in Paris, in summer, is, according to the author, infested with *Chilomastix aulastomi, Trichomonas sanguisugae, Entamoeba aulastomi,* and a Blastocystis. The Chilomastix is easily got by washing the rectum with a fine pipette and may be cultivated in Drbohlav medium, or in a medium containing "1 part of horse-serum and 9 parts of distilled water and 3 gm. per 1,000 of NaCl heated for 15 minutes to 100° C.," particularly when the pH = 6·8–7·4, and at a temperature of 20° C. The associated Entamoeba and Trichomonas multiply along with the Chilomastix and the point emphasized is that the two former quickly dispose of any red blood corpuscles that may be added to the medium, while the Chilomastix does not.

A. A.

TOULLEC (F.). A propos de la lambliose. [**Lambliasis.**]—*Bull. Soc. Path. Exot.* 1929. Mar. 13. Vol. 22. No. 3. pp. 163–165.

The opinion maintained here is that intestinal lambliasis is an "episode" of chronic infection of the gall-bladder. According to this opinion, in one stage of infection the flagellate is localized in the large intestine and causes dysenteric symptoms; in another stage it is localized in the duodenum and causes gastro-intestinal disorder; in a third stage it multiplies in the gall-bladder and causes trouble there and in the liver, and this stage being reached the gall-bladder becomes the permanent reservoir whence the flagellate is returned to the duodenum. In discussion DESCHIENS dissented from this opinion.

A. A.

KNOWLES (R.) & GUPTA (B. M. Das). **A** *Tricercomonas* **of the Pig.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 647–652. With 2 plates (1 coloured).

A new species of Tricercomonas, *T. suis*, from the pig is described and figured; it is characterized by its relatively enormous size and its sluggish motion. The authors direct attention to it as "a large parasite, easily cultivated, and very suitable for study. A study of it may help to clear up the confusion which at present exists with regard to the genera Enteromonas and Tricercomonas."

A. A.

COVENTRY (Frances A.). **Experimental Infections with *Trypanosoma lewisi* in the Guinea Pig.**—*Amer. Jl. Hyg.* 1929. Mar. Vol. 9. No. 2. pp. 247–259. With 3 text figs. [8 refs.] [Dept. of Hyg. & Bact., Univ. of Chicago, Chicago, Ill. & School of Hyg. & Public Health, Johns Hopkins Univ., Baltimore, Md.]

The course of infection with *Trypanosoma lewisi* in the guineapig was found to be similar to that in the rat, except that there was no great increase in the number of trypanosomes during the period of reproductive activity and that adult undividing trypanosomes varied slightly more in size. Attempts to influence the environment favourably by injection of large doses of normal rat-serum into the guineapig had no effect on the course of the infection. Preliminary experiments indicated that splenectomy does not alter the course of infection. Attempts to obtain a more virulent strain by continuous passage through guineapigs were of no avail. Serum from highly and very freshly immunized guineapigs was found to inhibit reproduction of trypanosomes in rats for 4 to 8 days only.

A. A.

ROSKIN (G.) & SCHISCHLIAIEWA (S.). Zur Frage des Mechanismus der Kernteilung bei Trypanosomen. [**Mechanism of Nucleus-Division in Trypanosomes.**]—*Arch. f. Protistenkunde.* 1929. Vol. 65. No. 3. pp. 299–305. With 3 text figs. [6 refs.] [Microb. Research Inst., Education Commissariat R.S.F.S.R., Moscow.]

The authors describe and figure the division of the nucleus in *Trypanosoma pecaudi*, *T. suauru*, and *T. gambiense*, and state that it is identical with that of *T. equiperdum*, *brucei*, *rhodesiense*, and *evansi* (described by them, as recorded in this *Bulletin*, Vol. 25, pp. 725–726).

A. A.

TAYLOR (A. W.). **Note on the Occurrence of Crithidia in *Phlebotomus minutus* var. *africanus* in Northern Nigeria.**—*Ann. Trop. Med. & Parasit.* 1929. Apr. 26. Vol. 23. No. 1. pp. 33–35. With 1 text fig. [3 refs.]

At Sherifuri during the wet season *Phlebotomus minutus* var. *africanus* was daily observed feeding in large numbers exclusively on caged Monitors (*Varanus exanthematicus* and *niloticus*) and a caged python; over 99 per cent. of the recognizable blood in their stomachs was reptilian. In 10·2 per cent. of the 304 flies dissected crithidia were present in the mid and hind gut, the heaviest infections 2 or 3 days after feeding, and no infections in flies containing fresh blood, or after digestion was complete. From the facts that the Monitors had trypanosomes in their blood and that the trypanosomes known to infect these lizards in Sherifuri is *T. grayi* the author is able to argue that the crithidia in the present case are developmental forms of that species. Since the life-cycle of *T. grayi* was observed by LLOYD and JOHNSON *et al.* to be continued in *Glossina tachinoides* the author thinks the present intervention of Phlebotomus may be accidental.

A. A.

MICHELSON (E.). *Bodo urinarius* Künstler, Parasit des Menschenharns. [*Bodo urinarius* **Künstler, Parasite of Urine.**]—*Cent. f. Bakt.* I. Abt. Orig. 1929. Apr. 25. Vol. 111. No. 6–8. pp. 403–406. With 7 text figs. [7 refs.] [Biol. Lab., Univ., Irkutsk.]

Description and somewhat diagrammatic figures of this well-known flagellate.

A. A.

BREINDL (V.). Ueber einen interessanten Flagellatenbefund im Blute der Malariakranken. [**An Interesting Flagellate in the Blood of Malaria Patients.**]—*Cent. f. Bakt.* I. Abt. Orig. 1929. Apr. 25. Vol. 111. No. 6–8. pp. 406–408. With 4 text figs.

Description, figures, and circumstantial account of a species of Bodo observed by the author in about ten instances in thick films of blood of soldiers suffering from benign and sub-tertian malaria. The author explains in detail how all the apparatus of his laboratory in Albania was perfectly trustworthy (absolut sauber). The films however, are said to have been made in the year 1918, and the discovery to have occurred in the examination of "old Albanian material."

A. A.

BARROS (Sebastião). Um caso de coccidiose humana por *Isospora belli*-Wenyon. [**Human Infection with** *Isospora belli* **Wenyon.**]—*Sciencia Med.* 1929. Apr. Vol. 7. No. 4. pp. 163–165. With 3 figs. on 1 plate. [2 refs.]

A medical man of 60 years in excellent health suddenly experienced attacks of pain ascribed to biliary colic, and soon after had severe diarrhoea, and the symptoms then disappeared. Ten days later he was again attacked by diarrhoea, with 10–12 actions daily, yellow and fatty, and the condition was diagnosed as "hepato-pancreatic insufficiency." The faeces contained oöcysts of *Isospora belli* in large numbers, but treatment by stovarsol, yatren, and measures to correct the glandular insufficiency proved disappointing.

This is the fourth case recorded in Brazil; the first by PINTO and PACHECA in 1925, another in 1927, the third by CARINI in 1928. The first and third patients suffered also from amoebic infection.

H. Harold Scott.

FRANCHINI (Giuseppe). Su un caso di coccidiosi umana di "Isospora hominis," Rivolta. [**Case of** *I. hominis* **Infection in Man.**]—*Arch. Ital. Sci. Med. Colon.* 1927. June. Vol. 8. No. 6. pp. 305–311. With 6 text figs. [9 refs.] [Inst. of Trop. Path., Univ., Bologna.]

The author, *inter alia*, describes the present condition, past history, and some details of the family history of a young man, who comparatively recently had suffered from amoebic dysentery, in whose stools spores of *Isospora bigemina* were found along with active forms and cysts of *Entamoeba histolytica*.

A. A.

TALIAFERRO (Lucy Graves). **Return to Normal of the Asexual Cycle in Bird Malaria after Retardation by Low Temperatures in Vitro.**—*Jl. Preventive Med.* 1928. Nov. Vol. 2. No. 6. pp. 525–540. With 6 text figs. [8 refs.] [Dept. Hyg. & Bact., Univ., Chicago.]

Having satisfied herself that the non-sexual cycle of her experimental strain of *Plasmodium cathemerium* is a true period, recognizably

constant and individually synchronous almost to the minute, the author was able to follow attempts to modify the period experimentally by changes in the environment. She found in drawn blood, containing the parasites, kept for various terms at 0·5° C. the development of the parasites ceased ; and that when the blood so treated was lodged in a bird the said period was retarded for a few generations to begin with, but then gradually returned to the norm. " To those that believe that the malarial parasites lie dormant during latency the present results would indicate that when the quiescent form initiated a new series of cycles the parasites, no matter when the cycle started, within a few generations would be back to normal. To those that believe the parasites continue their asexual cycle throughout latency the present work will be another indication of how difficult it is to alter the asexual cycle."

A. A.

MANWELL (Reginald Dickinson). **Relapse in Bird Malaria.**—*Amer. Jl. Hyg.* 1929. Mar. Vol. 9. No. 2. pp. 308–345. With 12 charts in text. [17 refs.] [School of Hyg. & Public Health, Johns Hopkins Univ., Baltimore, Md.]

Relapses occur in bird malaria as in man. Relapse in birds has been studied here most thoroughly in chronic infections of *Plasmodium cathemerium*, with comparative attention to *P. praecox*, *P. inconstans*, and the Whitmore strain also. A total of 332 birds was examined, the study being based on thin Giemsa-stained films of blood made from each bird twice a month over a term of 12 months. The following are some of the important conclusions :—

There appears to be a seasonal variation in the frequency of relapse, the conditions of the environment being on the whole constant. There is evidence of a definite seasonal variation in the proportion of relapses in which gametocytes are noted, the proportion being highest in the fall and winter. The average percentage of gametocytes to non-sexual forms in relapse is so low (about 7 per cent.) in the particular case of *P. cathemerium* that it seems doubtful whether chronic infections of this species are infective to mosquitoes. Immunity, as gauged by the frequency of relapse with relation to the time of initial infection, is greatest from 3 to 4 months after the original attack, and thereafter becomes less. Quinine and plasmochin given during the acute stage, or during the incubation period, probably exercise no influence on the frequency of relapse, although there is some indication that after plasmochin treatment, relapses are less frequent for the first few months, only to become more numerous later. There is no evidence that the severity of the original infection has anything to do with liability to relapse in the chronic stage. If complete recovery (sterilization) ever occurs naturally it does so very rarely, and prolonged absence of parasites from the peripheral blood, by ordinary standards of examination, cannot be regarded as an indication of recovery. During 18 months for which records have been kept, definite variations have occurred in the mortality rate from acute infections with *P. cathemerium*, the peak of the curve being in April. No evidence of parthenogenesis has been observed in the course of this study.

A. A.

BOYD (Geo. H.). **Induced Variations in the Asexual Cycle of** *Plasmodium cathemerium.*—*Amer. Jl. Hyg.* 1929. Jan. Vol. 9. No. 1. pp. 181–187. With 3 text figs. [4 refs.] [Dept. of Zool., Univ., Georgia.]

The object of the experiment here recorded was to observe whether the non-sexual cycle of *Plasmodium cathemerium* is subject to influences brought to bear upon the host. Infected canaries were kept in the light of a sunlight lamp during the night, and in darkness during the day. The following is the author's summary of the results :—

"1. The control birds show the same periodic sporulation as previously recorded by Taliaferro and others, the period of sporulation occurring usually around 6 p.m. daily.

"2. Birds which are kept in the light at night and in the darkness during the day have their time of sporulation shifted from the evening hours of corresponding morning hours [*sic*]. Approximately three days are required for this change to take place.

"3. When two groups of parasites, one of which is sporulating in the evening while the other is sporulating in the morning, are used for inoculation, a twelve-hour periodicity is not produced. Instead, the same type of infection is produced as when all parasites used for inoculation are of the same age."

A. A.

TALIAFERRO (William H.). **Infection and Immunity in Bird Malaria.**—*Porto Rico Rev. of Public Health & Trop. Med.* 1928. Oct. Vol. 4. No. 4. pp. 155–168. With 4 text figs. [29 refs.]

A generally-instructive survey of the subject given at the local School of Tropical Medicine.

A. A.

HEGNER (Robert). **Experimental Studies of Bird Malaria.**—*Quarterly Rev. Biol.* 1929. Mar. Vol. 4. No. 1. pp. 59–82. With 13 text figs. [34 refs.] [Johns Hopkins School of Hyg. & Public Health, Baltimore, Md.]

A good summary of the subject, which everyone may read with edification.

A. A.

MEYER (Hans). Beiträge zur Bartonellenanämie der weissen Ratte. [**Bartonella-Anaemia of White Rats.**]—*Cent. f. Bakt.* I. Abt. Orig. 1929. Vol. 110. No. 6-8. pp. 152–158.

These contributions are arranged in 3 sections, only one of which can be brought within the circuit of medical zoology. In this one the author, working in Berlin, emphasizes his observation that Bartonella anaemia fulminates in desplenated rats at the particular age of three to four weeks. In his experiments Bartonella and its associated anaemia occurred in 36 full-grown rats on the 4th day after splenectomy, and death followed (5 to 44 days afterwards) in 54 per cent. of cases ; whereas in 34 young rats, 3 to 4 weeks old, they followed splenectomy in 8 days, and the percentage of fatal cases was 90. Of 11 two-weeks-old rats only 35 per cent. became ill, on the 7th day after splenectomy, and only 36 per cent. of these cases ended fatally ; and of 9 eight-day-old rats (which stood splenectomy well enough) only one developed Bartonella and anaemia, and that on the 32nd day.

The second section of the paper discusses successful transmissions of Bartonella infection among rats by inoculation of infected liver and heart blood ; in the third section the prosecution of research by various culture media, for some discoverable contributory factor that may predispose the rat to anaemia is suggested. A. A.

PÉRARD (Ch.). Infection du chien par *Bartonella canis*. [**Infection of Dog by** *Bart. canis*.]—*C.R. Soc. Biol.* 1929. Apr. 26. Vol. 100. No. 13. pp. 1111–1113. [3 refs.]

Experimenting (in the light of the similar experiments made by KIKUTH, which have already been noticed in this *Bulletin*) with dogs that had recovered and were " premunized " from a prior piroplasmosis, splenectomy was followed by the appearance of inclusions in the red blood-cells of *Bartonella canis*, and subsequently by anaemia. The inclusions showed at different times as small spheres, slender straight or curved rodlets, granular rodlets (fines granulations accolées), and isolated cocci ; they seemed to replace one another in the course of the infection and all to be forms of the one species *Bartonella* (or *Grahamella*) *canis*. The infection could not be transmitted to the mouse or be cultivated in media suitable for *Bart. muris*; but could be transmitted to the rat with difficulty. A. A.

PANAYOTATOU (A.). Sur la blastocystose. Trois cas d'entérite à *Blastocystis hominis*. [**Three Cases of Blastocystis Enteritis.**]—*Bull. Soc. Path. Exot.* 1928. Nov. 14. Vol. 21. No. 9. pp. 755–760. [6 refs.]

Here are briefly described three cases—in an old woman and two children—where the prominent symptoms were glairy, sanguinolent, sometimes foetid, diarrhoea, and the conspicuous features were emaciation and extreme depression—in which the only organism found in the stools was *Blastocystis hominis*. The drugs that effected cure were, variously, emetine, stovarsol, neosalvarsan, and yatren. The author concludes that Blastocystis is " one of the most dangerous causes of tropical dysentery."

A. A.

WALL (R. E.). **Review of the Disease Histoplasmosis.**—*China Med. Jl.* 1928. Aug. Vol. 42. No. 8. pp. 580–581.

This is described as a review, by a student who prepared and studied some of the infected tissues, of a case of histoplasmosis already reported by Drs. WATSON and RILEY of Minnesota University (in the *Archives of Pathology* for January, 1926, and in the *American Journal of Tropical Medicine*, this *Bulletin*, Vol. 24, p. 68). The clinical features were a spleen ten times normal size, an " acute upper respiratory condition," great loss of weight, and a temperature not exceeding 102°. At autopsy the lungs were " diffusely consolidated " and showed much fibrosis, there was hobnail cirrhosis of the liver, and there were large firm lymph nodules along the splenic blood vessels, the aorta, and the common iliac. *Histoplasma capsulatum* was present in enormous numbers in the tissues ; the author remarks the resistance of the characteristic capsule to stains, and quotes the opinion of those who would transfer it from the protozoa to the fungi and place it near the Cryptococcus of the epizootic lymphangitis of the horse.

A. A.

WATSON (C. J.). **The Pathology of Histoplasmosis (Darling) with Special Reference to the Origin of the Phagocytic Cells.**—*Folia Haematologica.* 1928. Oct. Vol. 37. No. 1. pp. 70–93. With 30 figs. on 5 plates. [67 refs.] [Haematological Lab. & Dept. of Path., Univ., Minnesota, Minneapolis.]

This paper is grounded on a case where Darling's organism (*Histoplasma capsulatum*) was found abundantly in the organs specified below. The patient, a female, 52, born in Germany, resident exclusively in Minneapolis for last 44 years, had a history of moderate cough for last 20 years, enlarged spleen for last 8 years, and, quite recently, of supposed influenza, followed by clinical symptoms of bronchopneumonia and a severe haemorrhage thought to be haemoptysis. Shortly after admission to hospital a large fatal haematemesis occurred. The pathological discoveries were (besides healed apical tuberculosis and unresolved bronchopneumonia) cirrhosis of liver, splenomegaly, lymphadenopathy (mesenteric, retroperitoneal, mediastinal), ascites, hydrothorax, and mild nephrosis. The following is the author's own summary :—

"The parasites of Histoplasmosis produce a systemic infection in man, the portal of entry probably being through the skin or upper respiratory tract. The lesions produced occur in those organs where reticulo-endothelium or accessory tissue (alveolar histiocytes) is present in large amounts. In the present instance, the lungs, liver, spleen, lymph nodes, and adrenals showed marked involvement. In the early stage of the disease, it is believed that necrosis is prominent, shortly followed by phagocytosis, and later by hyalinization and some fibrosis, with the widespread production of focal hyaline lesions. Histoplasmosis is a non-suppurative disease. The reticulo-endothelial system, and its accessory histiocytic elements serve as the chief source of the large number of phagocytes. Lymphocytes supplement this formation by their ability to enlarge and become phagocytic in areas where the parasites are most abundant. This is in accord with the observations of MAXIMOW, DOWNEY, TSCHASCHIN, and LANG, and opposed to the views of KIYONO, concerning the specificity of vital staining for histiocytes. In the portal areas of the liver, there was evidence of transition from fibroblast to phagocyte in some instances. The phagocytes of the lung are largely derived from histiocytes occurring on the alveolar wall. True alveolar epithelium was not distinguished. This is in agreement with the previous reports of LANG, and FRIED, and contrary to those of FOOT, PERMAR, or MCJUNKIN."

A. A.

BOYCOTT (A. E.). **Sensitisation to Insect Bites.**—*University College Hosp. Mag.* 1928. Nov. Vol. 13. No. 5. pp. 200–202.

Earlier observations of the phenomena of specific flea-bites led the author to think that the irritating results of the bite of a bloodsucking insect might be explained as an anaphylaxis occurring [? only] after the bitten person had been sensitized to the proteids of the particular species of insect by a previous bite from that species. In ordinary circumstances the argument would be difficult of proof, since it is almost impossible to certify, in any particular case, whether or not the person under observation had previously been bitten by the particular species of insect. In the observations here described the author set females of a laboratory-bred batch of *Phlebotomus papatasii* —Phlebotomus being a natural genus that does not occur in the British

fauna—to bite six persons in England, of whom four had never had any chance of being bitten by a Phlebotomus, and all these four were completely "negative" at the first biting and all became sensitive and showed violent reactions at the second, or third, or fourth biting, from 7 to 13 days after the first. Of the other two persons, one, who had been much exposed to Phlebotomus in the East, reacted within 5 minutes of the first biting; and one, who possibly might have been bitten in southern Europe, showed no reaction to the first (and only) biting, although the bites flared up 16 days afterwards when the victim had been bitten by some British midges in Dorset. The author explains this last phenomenon alternatively by the assumption that Phlebotomus proteid sensitizes man to the proteid of another species of biting fly, or by the *petitio principii* that Phlebotomus must occur in Dorset. All that the author seems explicitly to claim for his results is that they are in harmony with his idea that a person has to be sensitized before he reacts to the bite of a blood-sucking insect. At the same time he admits that reaction to insect-bites may depend on idiosyncrasy, and allows it to be within the bounds of possibility to acquire active immunity to the bites of an insect as the result of frequent suffering from that insect.

A. A.

BOREL (E.). Les moustiques de la Cochinchine et du Sud-Annam. [**The Mosquitoes of Cochinchina and South Annam.**]—*Arch. Inst. Pasteur d'Indochine.* 1928. Oct. No. 8. pp. 41–76. With 12 plates.

A continuation, including the genera [or subgenera] *Finlaya*, *Aëdimorphus* and *Ochlerotatus*, of the descriptive catalogue of the mosquitoes of Cochinchina and South Annam, the earlier instalments of which were noticed in this *Bulletin*, *ante*, p. 248. The plates portray specific characters of male genitalia and larvae.

A. A.

BEDFORD (G. A. H.). **South African Mosquitoes.**—*13th & 14th Reports Director Vet. Education & Res.* Dept. of Agric. Union of S. Africa. Part II. 1928. Oct. pp. 883–990. With 22 text figs. [43 refs.]

This is a good descriptive catalogue of the mosquitoes of South Africa based on a critical survey of the taxonomy of the family and well provided with the synoptical tables that facilitate the identification of genera and species. In the descriptions of individual species attention is paid not only to synonymy and detail of world-distribution, but also, as far as possible, to local observation of seasonal prevalence, habits, and breeding-places; and in the case of the genus Anopheles good figures of the wing of each species are added.

A. A.

GATER (B. A. R.). **An Improved Method of Mounting Mosquito Larvae.** —*Bull. Entom. Res.* 1929. Mar. Vol. 19. Pt. 4. pp. 367–368. [5 refs.]

The mounting medium used consists of (in percentage) water, 10·0; picked gum arabic, 8·0; chloral hydrate, 74·0; glucose syrup, 5·0; glacial acetic acid, 3·0.

The living larva is placed on a slide and all surplus water is removed, some of the medium is dropped on it, and then a coverglass. Clearing begins as soon as the larva is dead (and with most species is complete in 2 hours, but with highly pigmented species not until perhaps 24 hours). After mounting, for permanence, the preparations are set aside to dry—a process that in a moist atmosphere may take 3 weeks—before being ringed. "The advantages claimed for this method are simplicity of technique and efficiency of clearing."

A. A.

WALCH (E. W.) & BONNE-WEPSTER (J.). Note sur la conservation des larves des anophèles. (**Note on the Preservation of Anophelinae Larvae.**)—*Riv. di Malariologia.* 1928. Nov.–Dec. Vol. 7. No. 6. pp. 866–867. [English summary p. 917.] [Hyg. Lab., Weltevreden.]

—— & ——. **A Simple and Reliable Method for mounting Anopheles Larvae.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1929. Vol. 18. No. 1. pp. 111–112. [Med. Lab., Weltevreden.]

—— & ——. Een eenvoudige en goede methode voor het insluiten van larven van Anophelinen.—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Feb. 20. Vol. 69. No. 2. pp. 167–169. [Med. Lab., Weltevreden.]

Berlese's liquid is recommended for mounting Anopheline larvae. It consists of: Glycerin, 40; Hydrate of chloral, 100; Pulverized gum arabic, 60; Water, 100.

The larva is immersed in a drop of the liquid on a slide and covered by a cover slip. In a dry climate the liquid has hardened sufficiently after a few hours to make transport possible, otherwise it is necessary (and always advisable) to seal the edges with wax (or a similar substance).

By reduction of water from 100 to 70 the preparation becomes sooner fit for transport, even in a wet climate. Larvae preserved in a 4 per cent. solution of formalin may be treated in the same way, but the best results are obtained with fresh specimens which are almost as transparent as those mounted in canada balsam.

N. H. Swellengrebel.

RUDOLFS (Willem) & LACKEY (James B.). **The Composition of Water and Mosquito Breeding.**—*Amer. Jl. Hyg.* 1929. Jan. Vol. 9. No. 1. pp. 160–180. With 6 text figs. [9 refs.] [N.J. Agric. Experim. Station, New Brunswick, N.J.]

This is a very elaborate study, but most of its observations and inferences are obvious; as that larvae soon died if the water did not contain enough food; that they soon died also after a rapid change in the reaction of the water, but did not seem to be affected by a gradual change in reaction; that the bottoms of different pools differed, and that decaying vegetable débris in different bottoms might variously affect the water in its fitness for the sustenance of micro-organisms for larval food. Other observations are that breeding went on whether bacteria were plentiful or few, but not when diatoms, protozoa, and algae were few; that carbon : nitrogen ratios did not seem to affect

breeding; and that larvae of one species of Aedes (*Ae. canadensis*) were present in water with either high or low total acidity, high and low CO_2, high and low chlorides, high and low sulphates, high and low acid carbonates and free ammonia and albuminoid ammonia.

A. A.

RIQUEAU. Les trous de crabes, gîtes à larves. [**Burrows of Crabs as Breeding-Places for Mosquito Larvae.**]—*Bull. Soc. Path. Exot.* 1929. Mar. 13. Vol. 22. No. 3. pp. 175–178. With 1 text fig.

In some market-gardens at Dakar the author found *Stegomyia fasciata* breeding in the pockets of water in which the tortuous burrows of the land-crabs terminate. The crabs did not interfere with the larvae. As the natives eat land-crabs the local sanitary authority thought it reasonable to frustrate the mosquitoes by setting the natives to catch the crabs in nocturnal hunts. Having killed off 3,477 crabs, many being females carrying eggs, the local sanitary authority seems to be satisfied that all is now well. In discussion ROUBAUD mentioned that the land-crabs in question were of the species *Cardiosoma armatum* (Herkl) [Cardiosoma is a genus well represented in the West Indies and neighbouring coasts of America, the Cape Verde Islands and west coast of Africa, and throughout Indo-Pacific coasts from Madagascar to Peru]. ROUBAUD also took occasion to explain that, although the introduction of *Stegomyia fasciata* was new to him in this connexion, the fact that a considerable number of species of mosquitoes used land-crabs' burrows for their brood was well known, and had indeed been brought to official notice in West Africa twenty years ago.

A. A.

ROSS (Ronald). **Mosquito-Control: General or Special?**—*Practitioner.* 1928. Oct. Vol. 121. No. 4. (No. 724). pp. 205–212.

The argument here is that for the control of mosquito-borne disease it is, as a general rule, simpler and cheaper to include at once all the mosquitoes of the district affected than to confine attention to particular species. General control does not call for the expensive employment of what the author calls a "conopsologist" [but might better have called a "conopologist"].

A. A.

LEGENDRE (J.). La concurrence entre moustiques zoophiles et anthropophiles. [**Competition between Zoophilous and Androphilous Mosquitoes.**]—*C.R. Acad. Sci.* 1929. Jan. 2. Vol. 188. No. 1. pp. 95–97. [2 refs.]

The author states that he has again been successful in expelling an "androphile" race of *Culex pipiens* from a troubled locality by the introduction of a batch of larvae and pupae of a "zoophile" race of the same species. He admits that the process is difficult to explain, but is satisfied that "the lack of an explanation does not annul the fact."

A. A.

WIGGLESWORTH (V. B.). **Delayed Metamorphosis in a Predaceous Mosquito Larva and a Possible Practical Application.** [Correspondence.]—*Nature.* 1929. Jan. 5. Vol. 123. No. 3088. p. 17.

This writer having prolonged the term of life of a larva of *Megarhinus brevipalpis* to about five months, by keeping it on a reduced diet (and having also, incidentally, carried it alive from Nigeria to England), thinks that the proposal for introducing Megarhinus into the islands of the Pacific to destroy the filaria-carrying *Aedes variegatus* there, might now be attempted hopefully. A. A.

ROUBAUD (E.). Cycle autogène d'attente et générations hivernales suractives inapparentes chez le moustique commun, *Culex pipiens* L. [**Autogenous Cycle of Winter Generations of** *Culex pipiens* **L.**]—*C.R. Acad. Sci.* 1929. Mar. 4. Vol. 188. No. 10. pp. 735–738. [1 ref.]

The torpor in which the fertilized female gnat (*Culex pipiens*) passes the winter (the male does not usually hibernate) is commonly regarded as being induced by cold ; the author endeavours to " explain " it as the result of an " asthenia " peculiar to the female generation hatched in autumn. The author has now discovered in Paris another method by which *Culex pipiens* tides over the winter season.

In a damp cellar containing some water and kept constantly at a temperature above 68° F. he found all through winter small and fragmentary egg-rafts, larvae of all stages, imagines escaping from their pupa-case, and adult males and females—but never a female holding blood. A study of this phenomenon leads him to conclude that this is what he terms a " suractive, thermophile race " of *Culex pipiens*, which goes on breeding, in rapidly succeeding generations, all through winter, from November to February, the adults without any nutriment but that afforded by moist air. In his own poetic language this " thermophile " race is " adapted not only to triumph over the customary winter asthenia, but also to maintain its lineage *per se* without appeal to any alimentary loan from outside. Males and females can live and breed (se reproduire) without other wants than those of a constant humidity . . . . The winged ones draw from their own organism the needful resources for progeny (ponte) without taking blood or any compensatory organic liquid from outside." When the winter is past the " autogenous " female stock resumes the ordinary blood-sucking habits, but has a predilection for the blood of birds. A. A.

HAMLYN-HARRIS (R.). **Notes on the Breeding Habits of** *Culex fatigans* **Wied., and its Associated Mosquitoes in Queensland.**—*Proc. Roy. Soc. Queensland.* 1928. Nov. 26. Vol. 40. No. 8. pp. 91–103. With 5 figs. on 2 plates. [11 refs.] [Dept. of Health, Brisbane City Council, Brisbane.]

This is a long account of extensive and protracted observation of the breeding-places of the almost cosmopolitan *Culex fatigans* in the neighbourhood of Brisbane, where its larvae are to be found in every sort and kind of water, and not always polluted water, so that they may occur in company with those of at least nine other species of more discriminative tastes. A. A.

HAMLYN-HARRIS (R.). **Notes on the Breeding-Places of** *Aëdes* (*Finlaya*) *notoscriptus*, **Skuse, in Queensland.**—*Bull. Entom. Res.* 1929. Mar. Vol. 19. Pt. 4. pp. 405–409. [6 refs.] [Entom. Section Dept. of Health, Brisbane City Council, Queensland.]

Attention is here drawn to *Aedes notoscriptus*, which is said to be abundant and semi-domestic in Brisbane. Naturally a tree-hole breeder it is now found breeding not only in bamboos and in the water held by the leaves of the wild pineapple and other plants, but also in any sort of vessels containing water, especially in cemeteries, and particularly about neglected graves. Of 15,644 graves so encumbered examined in one cemetery during the winter of 1927 no less than 7,713 were found to be breeding mosquitoes, a large percentage of which were *A. notoscriptus* alone, and a considerable percentage were that species associated with *Culex fatigans*. It appears to prefer alkaline water, and it does not shun direct sunlight.

A. A.

INGRAM (Alexander) & DE MEILLON (Botha). **A Mosquito Survey of Certain Parts of South Africa, with Special Reference to the Carriers of Malaria and their Control. (Part II).**—*Publications of the S. African Inst. for Med. Res.* 1929. Jan. Vol. 4. No. 23. pp. 83–170. With 26 figs. on 10 plates. [20 refs.]

The first part of this excellent report was noticed in this *Bulletin*, Vol. 25, p. 815. The surveys now reported still deal with High and Low Veld territory in the Eastern and Northern Transvaal. Among species of Anopheles not mentioned before is *A. marshalli* which, together with *A. longipalpis*, was found not infrequently, although both species have been accounted rare in S. Africa. The present report confirms the conclusion that *A. gambiae* (=*costalis*) and *A. funestus* are the chief carriers of malaria in S. Africa—the former being, perhaps, the mo dangerous because of its great abundance during the malaria season when the rains are well set. It is less elective in its breeding-places, being satisfied with puddles and shallow pools exposed to the sun; hence its abundance in the rainy season and its practical disappearance during the dry season. *A. funestus* on the other hand chooses for breeding the shady selvedge of sluggish streams, and its numbers fluctuate but little throughout the year. In the course of a bad malaria epidemic in the Rustenburg District *A. gambiae* was the only species captured in houses.

The Report includes lists of species of mosquitoes captured or bred from larvae, with local particulars of capture and of provenance of larvae; also a list of mosquitoes (8 species of Aedes, and *Culex pipiens* and *nebulosus*) found breeding in holes in trees; also illustrated descriptions of specific larvae and pupae not before described.

A. A.

BASU (Bhudeb Chandra). **On the Anopheline Mosquitoes of Hazaribagh (Bihar and Orissa).**—*Indian Med. Gaz.* 1929. Mar. Vol. 64. No. 3. pp. 141–142. With 2 text figs.

Hazaribagh ("The Thousand Gardens") is a small but locally well-known sanatorium in the hilly district of Chutia Nagpur, in the

province of Bihar and Orissa. It has a "lake," and there is also a swamp. It now appears that no less than eleven species of Anopheles —including such dangerous species as *listoni* and *culicifacies*—breed in these waters, and that Hazaribagh is becoming more and more malarious. (Chutia Nagpur is one of the districts that from of old has supplied the Assam tea-plantations with labour, and the time-expired coolies "invariably return home with a heavy malarial infection"). As the author says, Hazaribagh [which fifty years ago, as the reviewer knows, had an honoured name] should not be allowed to become a name of terror; and out of this present investigation, which was made during a holiday, he calls for a detailed mosquito and malaria survey.

A. A.

MacArthur (W. P.). **The Adult Mosquitoes of Shanghai.**—*Jl. Roy. Army Med. Corps.* 1929. Apr. Vol. 52. No. 4. pp. 241–247. [4 refs.]

This paper includes a most interesting account of *Anopheles hyrcanus* (=*sinensis*) the only species of Anopheles discovered in Shanghai by the author's careful search in the summer of 1897. Contrary to the settled beliefs of the local profession—beliefs based upon the traditional exemption of the European community from malaria—this common local species was proved by experimentation with an Indian soldier suffering from a convenient relapse, to be an efficient carrier of the infection, a discovery that afterwards led to the detection of 200 cases of "probable malaria" of indigenous origin among the population of the native quarter. The exemption of the European community appears to be due to the accident that the insect has a rooted dislike to large airy well-lighted rooms. *Anopheles hyrcanus* was not only found in the town and in the outskirts of the Settlement, but also was constantly observed in swarms at Hung Jao, about five miles distant, where large numbers took free advantage of the men's tents of the British Defence Force, though only 2 individual specimens were seen in the course of 10 days in the house used as the officers' mess. The British detachment at Hung Jao was therefore sent back to Shanghai, but of the men composing it some 100 subsequently developed malaria.

The other species represented in the collection made at Shanghai in 1927 are *Culex mimeticus*, *C. bitaeniorhynchus*, *C. tritaeniorhynchus*, *C. fuscocephalus*, *C. pipiens*, *C. fatigans*, *Lutzia fuscana*, *Aëdes* (*Stegomyia*) *albopictus*, *Ae.* (*S.*) *chemulpoensis*, and *Armigeres obturbans*.

A. A.

Boyd (Mark F.). **Studies on the Bionomics of North American Anophelines: Physical and Chemical Factors in their Relation to the Distribution of Larvae in Northeastern North Carolina.**—*Amer. Jl. Hyg.* 1929. Mar. Vol. 9. No. 2. pp. 346–370. With 6 charts & 1 fig. [3 refs.] [Station for Field Studies in Malaria, Edenton, North Carolina.]

These studies relate to three common North American species of Anopheles, namely, *A. quadrimaculatus*, *A. crucians*, and *A. punctipennis*, and the facts of general interest disclosed indicate that among the

circumstances determining the distribution of these species the temperature and reaction of the water and its tension of O and CO_2 are highly important. Breeding was never observed in waters entirely destitute of O. *A. quadrimaculatus* appeared to like waters with a fairly high CO_2 tension ; it and *punctipennis* favoured either an alkaline or a neutral reaction ; *crucians*, a reaction either neutral or acid. How these factors operate is not yet discussed, but the author is not satisfied that their influence is not exclusively upon the plancton.

A. A.

WEBSTER (W. J.). **A Note on the Anophelines found in Baroda Camp.** —*Indian Med. Gaz.* 1929. Apr. Vol. 64. No. 4. pp. 197–198. [4 refs.]

In the course of a regular watch continued during the whole of the year 1927, the following eight species of Anopheles were observed in the square mile occupied by Baroda Camp (in the Gujerat Division of the Bombay Presidency) : *A. subpictus*, *A. culicifacies*, *A. stephensi*, *A. fuliginosus*, *A. theobaldi*, *A. jeyporensis*, *A. funestus*, and *A. maculipalpis*. No. 1 was the commonest, and bred freely in stagnant pools and in any sort of thing holding water. No. 2, 3, 5, 7, 8 were caught in bungalows, No. 2 in the later months, and in large numbers, No. 3 occasionally and throughout the year, No. 5 occasionally, No. 7 and No. 8 once.

A. A.

REITLER (R.) & SALITERNIK (H.). Ueber Anophelenwanderung. [**Migration of Anopheles.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1929. Mar. Vol. 33. No. 3. pp. 170–181. With 3 text figs. [4 refs.] [Dept. of Hyg., Hebrew Univ., Jerusalem.]

The following is a translation of the authors' summary of this paper. In the region of Lake Tiberias there occurs a form of migration that hitherto has not been observed of Anopheles elsewhere ; it consists in a tendency of the wintering generation to drift in mass to distances —up to 12 kilometres—far beyond their normal range of flight. In this drift malaria-infected individuals take part, and to such an extent as to convert a highly malarious district into one with little malaria.

A. A.

KUMM (Henry W.). **Studies in the Dispersion of Anopheles Mosquitoes.** —*Amer. Jl. Trop. Med.* 1929. Jan. Vol. 9. No. 1. pp. 67–77. With 1 map. [5 refs.] [Station for Field Studies in Malaria, Edenton, North Carolina.]

These experiments were made in North Carolina, in a fertile district abounding in natural waters and also liable to inundations, and inhabited by negroes living in dirty and dilapidated cabins. Most of the mosquitoes captured and liberated were *Anopheles quadrimaculatus*. Of 616 stained insects liberated 3·7 per cent. were recaptured, only 1·9 per cent. in the place where they had been set free. The longest flight observed was 0·4 mile. The longest interval between liberation and recapture was 9 days.

A. A.

SMORODINZEW (I. A.), SÉBENZOW (B. M.) & ADOWA (A. N.). Les variations de la réaction réelle de réservoirs d'eau artificiels dans les recherches sur la biologie des anophèles. [**Variations of Reaction of Artificial Collections of Water and the Biology of Anopheles.**] —*C.R. Soc. Biol.* 1928. Dec. 14. Vol. 99. No. 36. pp. 1763–1766. [4 refs.] [Trop. Inst., Moscow.]

In earlier papers (see this *Bulletin*, Vol. 24, p. 883, and Vol. 25, pp. 815, 816) the authors recorded their observations of Anopheles larvae in marshes in the vicinity of Moscow, showing that the acid waters of bogmossy (Sphagnum) marshes poor in calcium and rich in iron were noxious to those larvae and that the alkaline waters of sedgy (Carex) marshes were propitious ; they now report some results of laboratory experiments designed to ascertain to what extent the reaction and chemical composition of the water are responsible influences. In these experiments artificial water strongly acidified with SO_4, of pH 2·43 to 2·71 and water strongly charged with iron, of pH 2·63 to 2·81, were as noxious as natural Sphagnum water (of pH 3·08 to 3·44), young larvae dying in 2 to 3 days after introduction. On the other hand the artificial waters most favourable for the young larvae were that, of pH 5·91 to 6·26, containing a double proportion of calcium ; that, of pH 5·82 to 6·24, in which calcium was much reduced chlorine being absent ; and a third water of which the only differential character seems to be a pH 6·73. Natural carex water, pH 5·75 to 6·70, in the laboratory was, contrary to expectation, not very favourable to the larvae. In all the experiments the several artificial waters differed in one variable, the tension in Na, K, Mg, Al, and Si being the same in all.

A. A.

SOESILO (R.). De experimenteele ontvankelijkheid van *Myz. rossii* voor malaria-infecties. [**Receptivity of** *Myz. rossii* **for Malaria Infection in Laboratory Experiments.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 5. pp. 725–731. [10 refs.]

The author infected with *Pl. falciparum*, and from the same four patients, (*a*) 75 *Anopheles subpictus* of Grassi (=*rossii*) bred from brackish, and (*b*) 15 bred from fresh-water larvae, and also (*c*) 32 *A. ludlowi* of Theobald. (All four carriers were being treated—3 with quinine, 1 with plasmochin). Of lot (*a*), 65 showed infection (29 salivary) ; of lot (*b*), all 15 (3 salivary) ; and of lot (*c*), 28 (9 salivary). —almost the same rate of infection for all three forms.

N. H. Swellengrebel.

BRUG (S. L.). Aanteekeningen omtrent Muskieten (IV). [**Notes on Mosquitoes.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 7. pp. 921–926. With 9 figs. on 3 plates. English summary pp. 926–927. [7 refs.] [Med. Lab., Weltevreden.]

Description of a new species of Anopheles of the subgenus Bironella from the Moluccas, *A.* (*B.*) *travestitus*, in *both sexes* of which the palpi are *very short* (about one-fourth the length of the proboscis) and the antennae merely *pilose*. A larva much resembling that of *A.* (*B.*) *bironelli* is tentatively associated with this species.

A. A.

DANILOW (B. A.). Des observations à propos de l'hivernage des imagos des cousins dans la vieille ville de Tachkent et ses environs. [**Hibernation of Mosquitoes in Tashkent.**]—*Pensée Méd. d' Usbéquistane.* Tashkent. 1928. Oct. No. 1. French summary p. 101. [In Russian pp. 51–60. 29 refs.]

In Tashkent the common Anopheles is *A. maculipennis* var. *sacharovi*, which hibernates in houses and warehouses. *A. superpictus* and *A. hyrcanus* are rare.

A. A.

DUREN (A. N.). Contribution à l'étude des culicides du Congo Belge. Province du Congo-Kasai. [**Study of Culicidae of Belgian Congo.**]—*Ann. Soc. Belge de Méd. Trop.* 1929. Mar. 31. Vol. 9. No. 1. pp. 97–115. [8 refs.]

A catalogue of the Mosquitoes of Leopoldville and Boma with particular reference to the breeding places and domiciliary habits of individual species.

A. A.

MATHESON (Robert) & HINMAN (E. H.). **The Vermilion Spotted Newt** (*Diemictylus viridescens rafinesque*) **as an Agent in Mosquito Control.**—*Amer. Jl. Hyg.* 1929. Jan. Vol. 9. No. 1. pp. 188–191. [3 refs.] [Dept. of Entomol., Cornell Univ., Ithaca, N.Y.]

In Ithaca (New York) the authors noticed the results of obvious decimations of mosquito larvae in woodland pools, and at last they suspected the vermilion-spotted newt. This suspicion they have confirmed from the newts' stomachs and by feeding experiments.

[It must be remembered that newts are restricted to the Northern Temperate Region.]

A. A.

MANDOUL. La lutte contre les moustiques, les mouches et les rats. [**The Battle against Mosquitoes, Flies and Rats.**]—*Jl. Méd. de Bordeaux.* 1929. Mar. 10. Vol. 106. No. 7. pp. 200–206.

This is a good compilation dealing with general principles and methods rather than with practical details of application.

A. A.

LANGERON (Maurice). Mycose d'une larve de *Culex hortensis* de Corse. [**Mycosis in a Larva of** *Culex hortensis* **in Corsica.**]—*Ann. Parasit. Humaine et Comparée.* 1929. Mar. 1. Vol. 7. No. 2. pp. 107–111. With 3 text figs. [6 refs.] [Parasit Lab., Faculty of Med., Paris.]

Study of a fungus growth found embracing a segment of the intestine and penetrating the trachea of a larva of *Culex hortensis*; well illustrated and documented.

A. A.

SICÉ (A.) & VAUCEL (M.). Etude des gîtes à larves de moustiques à Brazzaville. Présence du "*Stegomyia fasciata.*"—[**Breeding-Places of** *Stegomyia fasciata* **in Brazzaville.**]—*Bull. Soc. Path. Exot.* 1928. Nov. 14. Vol. 21. No. 9. pp. 768–770. [Pasteur Inst., Brazzaville.]

The outbreak of yellow fever at Matadi in 1927 has induced these observers to make it known that *Stegomyia fasciata* is abundant in Brazzaville [about 150 miles further up the Congo], and that most of its numerous breeding places are in the European quarter.

A. A.

MATHIS (M.). Biologie d'un moustique côtier du var. *Aëdes desbansi* Seguy 1923. [**Biology of** *Ae. desbansi*, **a Coastal Mosquito.**]—*Bull. Soc. Path. Exot.* 1929. Mar. 13. Vol. 22. No. 3. pp. 179–183. [1 ref.]

The author relates how he was able to breed this mosquito—which he found in nature breeding in rock-pools filled by the sea—in fresh water, but not in water of greater saltness than seawater. (e.g., of 100 gm. of salt to the litre).

A. A.

SMORODINZEW (I. A.) & ADOWA (A. N.). Variations de la conductibilité électrique des eaux de réservoirs artificiels dans l'étude de l'écologie des larves d'anophèles. [**On Variations of Electric Conductivity in Artificial Waters in the Study of the Oecology of Anopheles Larvae.**]—*C.R. Soc. Biol.* 1929. Jan. 18. Vol. 100. No. 2. pp. 88–89. [1 ref.] [Trop. Inst., Moscow.]

This instalment of the study of the oecology of Anopheles larvae deals with the approximate estimation of changes that occur in the mineral ions in artificial waters.

A. A.

ADOWA (A. N.) & SMIRNOWA (A. M.). Sur les variations du degré d'oxydation dans les réservoirs d'eau artificielle dans l'étude de l'écologie des anophèles. [**On Variations of Oxygen in Artificial Waters in the Study of the Ecology of Anopheles.**]—*C.R. Soc. Biol.* 1929. Apr. 19. Vol. 100. No. 12. pp. 998–1000. [2 refs.] [Trop. Inst., Moscow.]

This instalment of the study of particular factors in the environment of Anopheles larvae deals with differences of oxygen value (as indicated by activity of accretion of organic matter) in artificial waters. Even bogmossy waters, though far inferior to sedgy waters in this evidence of oxidation, are sufficient for the study of the oecology of Anopheles.

A. A.

ACHUNDOW (Ismail). Ein weiterer Beitrag zum Rassenproblem der Anophelen. [**A Further Observation on the Anopheles Race Question.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1929. Apr. Vol. 33. No. 4. pp. 215–219. [3 refs.] [Inst. for Ship & Trop. Diseases, Hamburg.]

This is a paper of an interest purely biological, dealing with the influence exercised by the colour of the vessels in which *Anopheles maculipennis* larvae were raised upon the larva itself, the pupa, and the imago. It cannot be summarized with lucid brevity.

A. A.

HUISMAN (R. G. J. P.). Malaria en Anophelinen in het bergland van Ceram. [**Malaria and Anophelines in the Hills of the Island Ceram (Moluccas).**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Apr. 10. Vol. 69. No. 4. pp. 369–376. With 1 plate & 1 folding map. [3 refs.]

In the hilly country (300–1,800 ft.) the malaria spleen rate varies from 14–70 per cent. *A. punctulatus* Dö., the most common species, is considered the principal carrier. Other species are *A. barbirostris* v.d.W. var. *pallidus* Sw., *A. aitkenii* James var. *insulae florum* Sw. and (at the coast, near Piru) *Bironella gracilis* Theob.

N. H. Swellengrebel.

RICKARD (E. R.). Estudios sobre el alcance del vuelo del *Anopheles pseudopunctipennis* en el norte argentino. [**The Range of Flight of** *Anopheles pseudopunctipennis.*]—*Semana Méd.* 1929. Apr. 11. Vol. 36. No. 15 (1839). pp. 899–906. With 3 figs. & 1 map. [5 refs.]

The author has discovered the average flight of *Anopheles pseudopunctipennis*—chief, some say the only, malaria-carrier in N. Argentina—to be 4 to 6 miles, despite natural impediments, and he therefore indicates the necessity of wide protective (antilarval) belts.

H. Harold Scott.

GONTSCHAROW (G. D.) [Nutrition des larves d'*Anopheles maculipennis* dans les conditions artificielles.] [**Nutrition of Larvae of** *A. maculipennis.*]—*Russian Jl. Trop. Med.* 1928. Vol. 6. No. 8. pp. 482–487. With 2 text figs. [6 refs.] [In Russian. French summary p. 488.]

The conclusions quoted in the summary are that the larvae of *Anopheles maculipennis* are omnivorous (upon the plancton), and that it seems that a rich plancton may compensate for poverty of calcium in the water.

A. A.

VAN THIEL (P. H.). La nourriture des larves de l'*Anopheles maculipennis* en rapport avec le problème de l'existence de la variété *atroparvus.* [**The Larval Pabulum in Relation to the** *Atroparvus* **Variety of** *Anopheles maculipennis.*]—*Bull. Soc. Path. Exot.* 1928. July 11, Oct. 10 & Nov. 14. Vol. 21. Nos. 7, 8 & 9. pp. 551–574; 687–693; 797–807. [41 refs.] [Inst. of Trop. Med., Leyden.]

Van Thiel returns again to his small, dark, *atroparvus* variety of *Anopheles maculipennis*, the origin of which he attributed chiefly to the modified pabulum of a particular larval environment [see this *Bulletin*, Vol.23, p. 712, Vol. 24, p. 883 and Vol. 25, p. 821]. As he now finds that the small variety retains, "en grande partie," its constancy when bred under observation in the same circumstances as the typical large form, he is confirmed in his opinion that it is an established genetic race, although he now thinks that its origination was not entirely due to a modified pabulum in the larva stage.

A. A.

IYENGAR (M. O. T.). **Comparative Study of the Larvae of** *Anopheles fuliginosus, pallidus* **and** *philippinensis.*—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 639–645. With 4 plates. [3 refs.]

According to the author, *Anopheles pallidus* of Theobald and *A. philippinensis* of Ludlow although having a wide range in Bengal have been generally mistaken for *A. fuliginosus* of Giles, which they resemble very closely. In these seven pages he describes and compares the larvae of the three species and also illustrates their differences *inter se* in four plates of microphotographs.

A. A.

SINTON (J. A.). **Notes on some Indian Species of the Genus** *Phlebotomus.* **Part XXIV.** *Phlebotomus barraudi* **n. sp.**—*Indian Jl. Med. Res.* 1929. Jan. Vol. 16. No. 3. pp. 716–724. With 2 plates. [3 refs.]

This new species, *Phlebotomus barraudi*, came from Assam and had been determined as a variety of *P. minutus*, until it was discovered that its buccal armature differed from that of any other species described from India. The detailed descriptions of both sexes are furnished with differential diagnoses and are further elucidated by figures of characteristic points of structure.

A. A.

MAGNITSKY (W. J.) & GUTZEWITSCH (A. W.). Zur Frage über die Veränderlichkeit einiger systematischer Merkmale der Arten der Gattung Phlebotomus. [**Variability of some Systematic Characters of Some Species of Phlebotomus.**]—*Cent. f. Bakt.* I. Abt. Orig. 1929. Jan. 11. Vol. 110. No. 4–5. pp. 199–208.

The authors find much variation in certain characters (of the antenna, palp, and wing) that are commonly assumed to have definite and distinct standards of constancy for the different species of Phlebotomus. They find that these characters not only may vary within the limits of the specific standard but also may differ on opposite sides of an individual fly; and they conclude that for females of the genus a rational method of classification is still to seek. The paper consists of minute detail and figures of measurements.

A. A.

MYERS (J. G.). **Further Notes on** *Alysia manducator* **and other Parasites (Hym.) of Muscoid Flies.**—*Bull. Entom. Res.* 1929. Mar. Vol. 19. Pt. 4. pp. 357–360.

From these miscellaneous notes on Hymenopterous parasites of Muscoid maggots the following observations are taken. (1) In exposed carcases (e.g., cats) the author has noticed a (potential) definite succession of different species of necrophagous maggots appearing with the advance of putrefaction, the succession being actually determined in the first obvious instance by weather. Thus with a fresh carcase and fine weather Lucilia and Calliphora took possession; but it often happened that when Lucilia and Calliphora were hindered by rain and cold, and the carcase became stale, then either *Hydrotaea dentipes* obtained a start, and its predatory maggots ousted all other Muscoid larvae; or, forms like *Muscina stabulans, M. pabulorum, Ophyra anthrax,* and *Piophila nigriceps* exploited the carcase. These observations, as the author points out, suggest that particular species of flies are attracted by particular products of the gradual processes of decomposition—not simply by the gross stink. (2.) The Braconid parasite *Alysia manducator* is not so eclectic as has been supposed; in England it is almost restricted to maggots of *Calliphora erythrocephala* and some species of Lucilia; in Australia and New Zealand it is now known to attack *Chrysomyia albiceps* also; an obstacle to its establishment in Australia is the presence of the very generally destructive pupa hyperparasite *Mormoniella vitripennis.* (3.) The Ichneumonid parasite *Atractodes gravidus* appears to be a specific parasite of *Hydrotaea dentipes.* (4.) The Cynipid *Figites striolatus* was bred abundantly from the pupae of *H. dentipes.*

A. A.

i. COUSIN (G.). Sur les relations entre l'accouplement et le réflexe de ponte de *Lucilia sericata* Mieg. [**Relation between Coupling and Oviposit in** *Lucilia sericata* **Meig.**]—*C.R. Soc. Biol.* 1929. Apr. 8. Vol. 100. No. 11. pp. 818–820. [2 refs.]

ii. ——. Sur les conditions extérieures déterminant le lieu de ponte de *Lucilia sericata* Mieg. [**Conditions determining Place of Oviposit of** *Lucilia sericata* **Meig.**]—*Ibid.* pp. 820–822. [2 refs.] [The Sorbonne, Paris.]

i. In rearing the blowfly *Lucilia sericata* the author sometimes gets batches of eggs that do not hatch. To clear up the matter he kept

under daily observation a lot of 100 virgins of this species, carefully isolated in maiden meditation from the moment of their eclosion, but well fed, and he found that the maturation and the periodic delivery of eggs—3 or 4 batches, each of two to three hundred eggs—during a term of a month or so, occurred with them almost exactly as in the ordinary fertilized female; some irregularity in the intervals between delivery of batches and in the number of eggs in the batch, and some increase in the length of virgin life, are the only noteworthy deviations from the normal. The virgin eggs, which were quite normal in appearance, did not develop, nor could development be excited by the usual artificial stimuli—mechanical, physical, or chemical. Thus the series of autogenous phenomena that culminates in the periodic delivery of eggs, termed by the author a "reflex," is independent of the act of fecundation.

ii. The author has observed the deposition of eggs of *Lucilia sericata* in nature—in a batch, the individual eggs coherent in the long axis, in serried superposed ranks, the lowest rank adherent to the substratum, which is either the carcase of an animal or the excrement of a non-herbivorous animal; but he questions whether the character of the substrate is to be interpreted as the manifestation of an instinct working for the benefit of the larva and the conservation of the species. He therefore examines the matter in his laboratory, where he finds that if Lucilia be fed exclusively on meat she deposits her eggs on meat, thrusting them well in, sometimes even into fragments of meat; but if she be allowed a varied diet of meat and sweets and fruit, she does not (as she should were she compelled by an instinct awakened by the sense of smell) deposit her eggs always on the meat, but very often on the fruit or on apple jam, where the larvae that issue soon die if they are not removed to a meaty pabulum. Whether it be on meat or on fruit, the eggs are deposited in the same mechanical way; the female touches the surface with the tip of her abdomen, inserts her ovipositor, and retires after emitting her eggs. The author therefore concludes that the act of delivery is a reflex action—a simple physiological reflex—the afferent impulse resulting from the contact of the tip of the abdomen with the organic substratum.

A. A.

DAVIES (W. Maldwyn). **Hibernation of** *Lucilia sericata*, **Mg.** [Correspondence.]—*Nature.* 1929. May 18. Vol. 123. No. 3107. pp. 759–760.

The author, in N. Wales, observed that between May and September, larvae of *Lucilia sericata* brought to his laboratory direct from infested sheep, completed their metamorphoses fairly constantly on the average in 21 days. From September 8th, however, they did not proceed even to the stage of pupation. On October 15th six batches each of 120 larvae were placed on as many earthen pots 5 inches deep filled with various kinds of soil, three of the pots being buried to the rim out of doors, and three kept in the laboratory, and all being covered with muslin. In about 15 minutes the larvae had burrowed out of sight. Throughout the winter until March 20th to 26th, they remained deep buried in the earth, dormant, the minimum air-temperature (February 14th) just above the out-door pots being 16° F. and the soil then completely frozen. Between March 20th to 26th (mean daily temperature

53·8° F.) the larvae began to make their way towards the surface, ultimately coming to rest within quarter of an inch of it. Between April 2nd and 10th the majority had pupated. The first fly emerged on April 27th outdoors and April 10th indoors. Humidity was maintained by daily watering of the pots. The author notes that *Lucilia sericata* is known to winter in the larva and pupa stages, in the U.S.A.

A. A.

STEWART (M. A.). **A Case of Dermal Myiasis caused by** *Phormia regina* **Meig.**—*Jl. Amer. Med. Assoc.* 1929. Mar. 9. Vol. 92. No. 10. pp. 789–799. With 3 text figs.

A young negress of the unfortunate sisterhood, admitted for an ulcerative and septic inflammation of the scalp. A purifying, but exceedingly painful, sulphur lotion aroused a swarm of maggots, which were picked away as they attempted to escape. Some that were caught and kept alive to the final metamorphosis were identified as *Phormia regina*. The author gives a description of the fly and its habits, and describes and figures the larva and its posterior spiracles.

A. A.

BOUFFARD (G.) & LEGAC (P.). Myiase à *Chrysomyia bezzianum* [*sic*] observée chez un indigène de la Côte d'Ivoire. [*Chrysomyia bezziana* **Myiasis in a Native of the Ivory Coast.**]—*Bull. Soc. Path. Exot.* 1929. Jan. 9. Vol. 22. No. 1 pp. 48–49.

In this case 163 maggots of *Chrysomyia bezziana* were removed from a tumour of the chin from which the usual foetid sanious exudation issued. The patient was a thief, who after being caught *flagranti crimine* and badly beaten, fell into a sleep of exhaustion in the jungle [when and where one of his wounds got fly-blown.]

A. A.

LIMA (J. S. Souza). Considerações em torno de um caso de berne palpebral. [**A Case of Palpebral Myiasis.**]—*Brasil-Medico.* 1929. May 25. Vol. 43. No. 21. pp. 601–603.

A child, 28 days old; with the right lower eyelid much inflamed, resembling a furuncle pointing on the conjunctival surface, due to the larva of *Dermatobia cyaniventris*.

H. Harold Scott.

KARIBOW (N.). [Ein Apparat zur gewaltsamen Fütterung der Stechmücken.] [**Apparatus for Forcible Feeding of Bloodsucking Flies.**]—*Nachrichten d. Tropischen Medizin.* Tiflis. 1928. Nov. Vol. 1. No. 1. [In Georgian script. German summary p. 114.]

The apparatus consists of a glass tube with one end drawn out into a capillary and the other end fitted with a piston. When the fly to be fed is in the tube the piston is inserted and the fly driven down and manipulated until its proboscis is in the capillary attenuation, the end of which is now placed in a drop of blood. The blood can be seen to mount by capillary attraction and in time to be absorbed by the fly.

A. A.

SIMMONS (R. J.). **Notes on a Tsetse Belt in Western Uganda.**—*Bull. Entom. Res.* 1929. Mar. Vol. 19. Pt. 4. pp. 421–433. With 1 text fig., 2 plates & 1 map.

This is the history of a local invasion by *Glossina morsitans* and of its fluctuating progress over about a thousand square miles of country in the course of 21 years, the said country lying in the southwest corner of Uganda, immediately north of the Kagera river. The country was free from tsetse fly before 1905, and cattle grazed there. About 1906, tsetse came northwards across the Kagera, and soon afterwards cattle began to die from a new disease. With the removal of the cattle northwards, the fly was spread a few miles and in small numbers, mainly northwards. In 1914–15 military activity led to a great increase of local traffic (mainly mechanical), and since "many hundreds of *G. morsitans*" might be smoked off a motor cyclist, this temporary influx of armies was soon followed by a great increase in numbers and a rapid extension in range of the fly along the line of northern communications. To check this spread, a smoke-house (a rough shed of poles and grass, wherein clouds of smoke were generated from damp foliage piled on a forge) was established, and through this shed all traffic, whether wheel or foot, had to pass before leaving the fly-belt; but in the four years since the arrival of this human population the fly had advanced another 25 miles northwards—the spread being brought about by man. In 1919–20 the territory was devastated by rinderpest, both cattle and game being destroyed, and as a consequence the fly in the course of the next 5 or 6 years fell back nearly to the Kagera river.

In 1926 a discovery of tin led to a renewal of traffic, but the effect of this upon the spread of the fly has still to be discovered; whether or not it is returning to the northerly limits reached during the War, is still doubtful. On the experience of the war-time, smoke-houses have been established and are said to be holding the fly. [Unfortunately, although we are told that after a short term of fumigation, a motor cyclist loaded with many hundreds of flies, would ride out of the smoke-house quite free from them, all that is said of the flies is that they "disappeared"].

A. A.

RUTTLEDGE (W.). **Tsetse-Fly** (*Glossina morsitans*) **in the Koalib Hills, Nuba Mountains Province, Sudan.**—*Bull. Entom. Res.* 1928. Dec. Vol. 19. Pt. 3. pp. 309–316. With 1 sketch map & 12 figs. on 2 plates.

The fly in this part of the Sudan is said to be restricted to the hills, to breed in the shade of rocks, and, owing to the scarcity of wild animals, to be dependent chiefly on the native Nubas and their livestock—dogs, pigs, cattle, sheep, and goats. Trypanosomes have been found in the blood of these animals, as also in the salivary glands of the fly; but the cattle and sheep and goats are resistant to the disease. An attempt to control the fly by organized "swatting" during four months reduced their number to a certain extent; but in some experiments with "stickphast" plasters attached to cattle and to men's leggings the flies seem to have been scared by the glistening reflection from the wet sticky surface.

A. A.

VAN DER KODDE (W. F.). **The Presence of** *Xenopsylla astia* **in Semarang. Preliminary Statement.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1928. Vol. 17. Pt. 4. pp. 530–534.

After the publication of HIRST's discoveries explaining the immunity from epidemic plague enjoyed by certain areas in Ceylon and India as due to the fact of *Xenopsylla astia* being the chief or only species of rat-flea existing in such areas, the author investigated certain quarters of the city of Samarang (northern coast of Java) distinguished by a history of freedom from plague, and he found that there, too, the only rat-flea in those quarters was *X. astia.* [Another contributory factor, as he points out, might be the absence there of the black rat.]

A. A.

MAKAROFT (A. K.). [Einiges über die Erforschung der Ectoparasitenfauna der südlichen Ukraine. Flöhe.] [**Fleas of the Southern Ukraine.**]—*Rev. Microbiol., Epidémiol. et Parasit.* 1928. Vol. 7. No. 14. pp. 431–434. [16 refs.] [In Russian. German summary pp. 463–464.]

From susliks (Spermophilus), *Ceratophyllus simplex, Ctenophthalmus orientalis, Neopsylla setosa,* and *Frontopsylla semura*; from men, *Pulex irritans, Ctenocephalus felis* and *C. canis*; from a hedgehog, *Archaeopsylla erinacei*; from brown rats, *Ceratophyllus fasciatus* and *Ctenopsylla musculi*; from a mouse, *Ctenophthalmus orientalis* and an unidentified Ceratophyllus.

A. A.

WAGNER (J.). [Zur Benennung *Ctenopsyllus* Kolenati.] [**On the Application of the Name Ctenopsyllus.**]—*Konowia.* Vol. 6. No. 4. pp. 287–290. [Summarized in *Bull. Inst. Pasteur.* 1929. Apr. 15. Vol. 27. No. 7. p. 334.]

The author thinks that by the law of priority the generic name Leptopsylla, which he states to be the name used in England for the mouse flea, should be changed to Ctenopsyllus.

A. A.

ROCH (M.). Les piqûres d'hyménoptères au point de vue clinique et thérapeutique. [**Clinical and Therapeutic Aspects of Stings from Hymenoptera.**]—*Rev. Méd. Suisse Romande.* 1928. Nov. 10. 48th Year. No. 14. pp. 913–950. [77 refs.]

This is a general review, incited by personal experience of 137 cases of stinging by bees and wasps and hornets, but not going outside familiar tracks. Due notice is taken of the serious and even quickly fatal effects that occasionally follow such stings, as from an idiosyncrasy, or from a temporary vulnerability of the victim, or from a sting in parts where local swelling may obstruct breathing or may penetrate deep enough to send the venom straight into the bloodstream, or from many simultaneous stings. Respectful notice is taken of the current belief in the efficacy of bee-venom for treatment of rheumatism.

A. A.

CURRY (D. P.). **Blister Beetles of the Genus** *Paederus* (*Coleoptera: Staphylinidae*) **as a Cause of Dermatitis.**—*Proc. Med. Assoc. Isthm. Canal Zone.* 1927. Vol. 15. pp. 37–38. [1 ref.]

A report from Ecuador on the character of the notorious Staphylinid blister beetle, *Paederus irritans,* stating that after abnormal rainfall it appears locally in such numbers as to bring about "a violent epidemic of dermatitis sometimes so severe as to resemble erysipelas."

A. A.

COUTELEN (F.). Parasitisme et thysanoures. [**Thysanura and Parasitism.**]—*Bull. Soc. Path. Exot.* 1928. Dec. 12. Vol. 21. No. 10. pp. 853–855. [3 refs.] [Parasit Lab., Faculty of Med., Paris.]

[The Thysanura (bristle-tails), in which the author includes also the Collembola (spring-tails), is an order of small, inconspicuous, wingless insects, of which the silver fish-insect and the skip-tail are familiar examples.]

MEGNIN, in 1878, described a case where swarms of spring-tails were found in the epidermal exudations of some horses affected with a general and chronic pityriasis. FRÊCHE and BEILLE in 1896 reported a case of an old man, well to live and fastidious in his person, who for five years suffered from a pungent itching, which spread from his scalp all over his trunk and limbs, and in whose scalp bristle-tails of the genus Seira were discovered. The author now relates the case of an elderly woman whose scalp for two summers was infested with Collembola of the common species *Lepidocyrtus curvicollis,* which caused a very lively itching. The author does not advance this as a case of true parasitism; but he observes that some species of Thysanura are saprozoic, and others are commensals of ants and termites, and hence come parlous near the border-line.

A. A.

SCHMAUS (L. F.). **Case of Arachnoidism (Spider Bite).**—*Jl. Amer. Med. Assoc.* 1929. Apr. 13. Vol. 92. No. 15. pp. 1265–1266. [Halstead Hosp., Halstead, Kan.]

Case of a young woman bitten on the elbow by a spider. Pain started at once, and some hours later the arm was swollen and a general rash appeared. Four days later the rash "seemed to be fading"; but next day, when the patient came to hospital, restless and anxious, a scarlatina-like rash covered chest, abdomen, arms and legs, with some small pustules on the legs. The elbow was then still swollen and tender and the bite still showed as a small pustule. There were traces of albumin in the urine, and the percentage of large lymphocytes in the blood was 32. Treatment—sedatives, starch and sodium bicarbonate baths, lead lotion locally. Result not recorded. The spider was identified as *Loxosceles rufescens.* [Loxosceles is a genus of spiders widely distributed over the globe.]

A. A.

HASE (Albrecht). Zur pathologisch-parasitologischen und epidemiologisch-hygienischen Bedeutung der Milben, insbesondere der Tyroglyphinae (Käsemilben), sowie über den sogenannten "Milbenkäse." Beiträge zur experimentellen Parasitologie. 3. [**The Pathological Significance of Mites.**]—*Ztschr. f. Parasitenk.* 1929. Mar. 26. Vol. 1. No. 4/5. pp. 765–821. With 8 text figs. [7 pages of refs.]

Of this long discourse on mites 7 close-printed pages are occupied by a valuable bibliography, 9 are given to the subject of Altenberg mitey cheese (cheese artificially infected with mites specially bred for the purpose of imparting flavour appreciated by gourmets), and another 12 to the oecology of mites—particularly of *Tyroglyphus siro* and to the proof that this familiar species does not eat mould and does not live together with mould in mass-culture, but rather is confined to settled limits of moisture. Twenty-five pages are thus left for mites that have a particular interest for the medical profession—and those dealt with here by the author belong almost entirely to the two families of *Sarcoptidae* (itch-mites) and *Tyroglyphidae* (food-mites). These are considered, independently and rather artificially, (1) as causes of skin disease, (2) as causes of "allergic disease," (3) as causes of gastro-intestinal disease, and (4) as a whole in their epidemiologic and hygienic significance. In his discourse the author brings in all the well-known genera of *Sarcoptidae* and *Tyroglyphidae* that attack man, and also the notorious *Pediculoides ventricosus* and the harvest-mites (Trombiculae) of autumnal erythema, but he overlooks the Trombiculae that cause the Tsutsugamushi fever of Japan and those responsible for a similar fever in the Netherlands East Indies. He also gives a list of the various industries and occupations in which the workers are particularly liable to be affected by mites, either through the skin or by inhaling an atmosphere laden with mitey dust. The compilation is a useful one.

A. A.

HIRST (A. Stanley). **On the "Scrub Itch Mite" of North Queensland (*Trombicula hirsti* Sambon)—a Possible Carrier of Tropical Pseudo-typhus.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Mar. 9. Vol. 22. No. 5. pp. 451–452. With 1 fig. [1 ref.] [Med. School, Univ., Adelaide.]

A note describing and figuring the diagnostic points of *Trombicula hirsti*, a species described by SAMBON in *Ann. Trop. Med. & Parasitol.*, Vol. 22, June, 1928.

A. A.

COLAS-BELCOUR (Jacques). Ponte et éclosion des ornithodores : leur élevage. [**Breeding Management of Ornithodorus.**]—*Arch. Inst. Pasteur de Tunis.* 1929. Mar. Vol. 18. No. 1. pp. 43–49. [10 refs.]

This paper, dealing with details of ménage, cannot be summarized. Some desert-loving species of Ornithodorus, namely, *O. savignyi* and *O. moubata*, come in for a good deal of mention, and information is given that in breeding them dry sand must be substituted for the usual provision of moisture. For example, a replete female of *O. savignyi* is placed in a breeding-tube with dry sand in July and has a happy delivery of eggs in 14 days, and the eggs hatch 16 days after

the event: another replete female of the same species from the same host is placed in a breeding-tube on the same day, without any sand, and is still "expecting" in September: two other replete females of the same species are put each into a breeding-tube with the usual provision for humidity, and remain apathetic for 34 days, until they are supplied with sand; then in 11 days they are delivered of eggs, which hatch 10 days afterwards.

A. A.

DELANOË (P.). Présence de l'Ornithodore du Maroc dans les terriers de porcs-épics et de renards et dans les habitations humaines. Son existence au Maroc oriental. Fréquence d'un spirochète récurrent chez les Ornithodores des terriers. [**Ornithodorus in Morocco in the Earths of Porcupines and Foxes and as a Host of a Relapsing Fever Spirochaete.**]—*C.R. Acad. Sci.* 1929. Apr. 8. Vol. 188. No. 15. pp. 1013–1015. [3 refs.]

In Eastern Morocco, and often in places there where pigs have never been kept, *Ornithodorus marocanus* is almost a constant partner in the earths of the porcupine, and also often inhabits fox-earths, and there is frequently found—particularly in the former location—infected with a spirochaete of relapsing fever. *O. marocanus* has also been known to feed on man.

A. A.

MOSKWIN (J. A.). Die Wirkung des Bisses der Zecke *Ornithodorus papillipes* Bir. auf die Haut der Versuchstiere. [**Effect of the Bite of *Ornithodorus papillipes* upon the Skin.**]—*Cent. f. Bakt.* I. Abt. Orig. 1929. Jan. 11. Vol. 110. No. 4/5. pp. 208–213. With 2 text figs. [5 refs.]

The bite and saliva of *Ornithodorus papillipes* evoke in animals and man a local inflammatory reaction with the formation of a haemorrhagic papilla at the wound.

A. A.

BUCHMANN (Max). Tutocain bei Skorpionenstichen. [**Tutocain in Scorpion Sting.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1928. Dec. Vol. 32. No. 12. p. 612.

In the author's experience the very best treatment for scorpion sting is a local injection of 2cc. of a 1 per cent. solution of tutocain-suprarenin.

A. A.

PERUZZI (Mario). Sulla biologia e l'anatomia patologica della porocefalosi. [**Biology of Porocephalus and Histology of the Lesions it produces.**]—*Ann. di Med. Nav. e Colon.* 1929. Jan.–Feb. Year 35. Vol. 1. No. 1–2. pp. 1–19. With 19 figs. on 4 plates. [26 refs.]

The author's original observations refer to four cases of infection by Porocephalus in Cercopithecus monkeys at Entebbe, two of which had died after inoculation with trypanosomes and the other two from the Porocephalus infection itself. Along with severe peritonitis eight specimens were found free and moving in the peritoneal cavity of one, 11 in the other; apart from this, inflammation and fibrosis were set up

in the liver by their migration. On section are seen a fibrinous reticulum, polymorphonuclear leucocytes, macrophages, giant-cells, and an amorphous pigment and hyaline deposit, apparently the product of secretion of the glandular apparatus of the alimentary canal, and also small focal haemorrhages with remnants of red corpuscles, fibrin and cellular detritus. In the nymph stage, so long as the parasite is quiescent and encysted, it does no harm, but if it escape from the cyst, it—like the larva—may migrate and set up the changes described above.

Some well-reproduced photographs illustrate the parasite and the lesions in the tissues.

H. Harold Scott.

PORTER (Annie). **Note on a Porocephalid found in a Shangaan in South Africa.**—*South African Jl. Sci.* 1928. Dec. Vol. 25. pp. 359–363. With 3 text figs.

Describes and figures the larva or nymph of *Armillifer armillatus* found encysted in the liver of an African dead of tuberculosis. The adult form is also figured.

A. A.

ARIAS SCHREIBER (Luis) & ESCUDERO FRANCO (Francisco). Un caso de miasis cutánea.—*Crónica Méd.* Lima. 1928. Feb. Vol. 45. No. 776. pp. 58–61. With 1 text fig.

DE BUCK (A.), SCHOUTE (E.) & SWELLENGREBEL (N. H.). Studien über Anophelismus ohne Malaria in der Umgebung Amsterdams.—*Cent. f. Bakt.* I. Abt. Orig. 1928. Nov. 7. Vol. 109. No. 5/6. pp. 251–284. With 5 maps, 6 graphs & 3 figs. on 1 plate. [Refs. in footnotes.]

LAVIER (G.). Sur quelques anomalies chez *Trypanosoma lewisi.*—*C.R. Soc. Biol.* 1929. Apr. 8. Vol. 100. No. 11. pp. 875–876. [2 refs.]

LEVINSON (L. B.). Die Anaphylaxie bei Protozoen. I. Mitteilung.—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1929. Vol. 60. No. 3/4. pp. 192–204. [8 refs.] [Microbiol. Research Inst., Education Commissariat R.S.F.S.R., Moscow.]

MARTINI (E.). Ueber parasitische Fliegenlarven nebst Bemerkungen über die Kultivierbarkeit pathogener Mikroorganismen.—*Dermat. Woch.* 1929. Apr. 13. Vol. 88. No. 15. pp. 548–552. [Inst. for Ship & Trop. Diseases, Hamburg.]

MISSIROLI (A.) & HACKETT (L. W.). La reazione precipitante per stabilire la provenienza del sangue succhiato dagli anofeli.—*Bol. Istituto Sieroterap. Milanese.* 1929. May. Vol. 8. No. 5. pp. 273–282. With 2 text figs. [3 refs.] English summary p. 282. [Experim. Station, Anti-Malaria Campaign, Rome.]

MITROFANOVA (Julia). On the Growth of the Head in the Larva of *Anopheles maculipennis,* Meig.—*Bull. Entom. Res.* 1929. Mar. Vol. 19. Pt. 4. pp. 361–366. With 2 text figs. [Bact. Inst., Perm, Russia.]

MOUFEL (P. P.). [*Anopheles bifurcatus* dans les gouvernements du centre agricole.]—*Russian Jl. Trop. Med.* 1929. Vol. 7. No. 1. pp. 56–57. [In Russian.]

OUZILLEAU (F.). Un cas de myiase urinaire.—*Bull. Soc. Path. Exot.* 1928. Dec. 12. Vol. 21. No. 10. pp. 852–853.

PROVERA (P.). Sur l'inactivation du complément avec le venin de cobra.—*Bol. Sezione Ital., Soc. Internaz. di Microbiologia.* 1929. Apr. Year 7. Vol. 1. No. 4. pp. 79–80. [Serotherap. Inst., Milan.]

SILBERSTERN (Ernst). Ein Fall von akuter Enteritis mit auffallender Vermehrung von *Blastocystis hominis* im Stuhle.—*Klin. Woch.* 1929. Mar. 19. Vol. 8. No. 12. pp. 553–554. [10 refs.] [Police Hosp., Vienna.]

UNDULANT FEVERS.

MANSON-BAHR (Philip) & WILLOUGHBY (Hugh). **A Critical Study of Undulant Fever. From a Series of Six Cases in the Hospital for Tropical Diseases, London.**—*Brit. Med. Jl.* 1929. Apr. 6. pp. 633–635. With 3 charts in text.

In view of the occurrence of cases of undulant fever (*abortus*) in man and cattle the authors consider that a brief account of the symptomatology of a series of cases would be useful. These cases were treated in the Hospital for Tropical Diseases in London, and came from such widely separated countries as India, Peru and East Africa, and were all, without exception, presumably infections with *Br. melitensis*, although this is not definitely stated.

The definite diagnostic syndrome of the authors includes :—

1. A high initial remittent pyrexia (up to 105° F.).
2. Splenomegaly of a considerable degree.
3. Positive melitene reaction.

Among the most prominent symptoms were noted arthritic pains and peri-articular effusions, headache with insomnia and late epistaxis.

The authors also point out that in most of the cases there was a specific adenitis occurring about the fourth month of the disease. Testicular pain was noted in half the number of the cases and profuse and drenching sweats in all. Blood culture was positive in four out of six cases and the agglutination test was positive in all.

D. Harvey.

KLING (C.). La fièvre ondulante en Suède. [**Undulant Fever in Sweden.**]—*Bull. Office Internat. d' Hyg. Publique.* 1929. Mar. Vol. 21. No. 3. pp. 412–420. With 1 map in text. [1 ref.]

During the period December 23rd, 1927, to August 4th, 1928, 73 cases of undulant fever were diagnosed in Sweden. Since March, 1928, all sera sent in to the Public Health Laboratories have been tested against *Br. abortus* and in this way 39 cases have been detected. The author calculates that there are from three to four new cases per week and, indeed, there are more cases of undulant fever in Sweden than there are cases of paratyphoid B, and the disease is just as prevalent as is true typhoid fever. By means of a map it is clearly shown that undulant fever in man occurs in the districts where contagious abortion is most prevalent.

Sixty-four cases were analysed, and it was found that of these, 18 were in women and 46 in men and the age period of maximum incidence was from 21–40 years.

A table is given showing the results of serological investigations of 30 cases, both for agglutination and complement-fixation tests and also the result of blood cultures. The author considers that the organism is more readily isolated by animal inoculation (guineapig) than by culture of the blood, and also draws attention to the frequency of the "zone" phenomenon in the serological tests. The laboratory investigations showed that there was no difference between the bacteria isolated from cases of abortion in cattle and the bacillus isolated from cases of undulant fever in man. Further proof of the pathogenicity

of the *Br. abortus* for man was shown by the fact that one of the laboratory workers engaged in the research contracted undulant fever in the laboratory.

Three thousand samples of sera sent in for Wassermann tests were tested for agglutinins for *Br. abortus*, and of these, 145 agglutinated this organism in a dilution of 1-10 or higher. An interesting point is that of these 145 people, 107 were women and 38 men, just the reverse proportion to that in the previously diagnosed cases.

Notification of the disease is compulsory in Sweden and prophylactic measures are to be enforced.

D. H.

KAVANAUGH (Chas. N.). **The Epidemiology of Undulant Fever.**—*Southern Med. Jl.* 1929. Mar. Vol. 22. No. 3. pp. 290–294. [33 refs.]

This paper consists of a survey of the literature on the subject of *melitensis* and *abortus* infections in man and in animals. It is stated that during the past year (1928) the State laboratories of Kentucky have agglutinated all sera submited for the Widal reaction against *Bact. tularense* and *Br. abortus*. In this way ten cases of undulant fever have been diagnosed serologically and later proved clinically. Surveys have shown that up to 90 per cent. of herds are infected in some districts and practically no region is free. Elaborate suggestions for controlling the disease in cattle have been circulated by the authorities in Kentucky and the use of pasteurized milk is advised for all persons.

D. H.

LÖFFLER (W.). Zum Vorkommen und zur Diagnostik der Febris undulans. [**Incidence and Diagnosis of Undulant Fever.**]—*Schweiz. Med. Woch.* 1929. Mar. 16. No. 11. pp. 304–307. With 3 charts. [8 refs.] [Med. Polyclinic, Univ., Zurich.]

The author relates the case of a veterinary surgeon who had been working with cultures of *Br. abortus* and developed fever ; he himself was of opinion that this was undulant fever but the agglutination and complement fixation tests for *Br. abortus* were entirely negative, as also were repeated blood cultures. The case proved subsequently to be a tuberculous infection.

This investigation however, threw light on a series of undiagnosed cases which had come under the care of the author ; later a definite diagnosis of undulant fever by positive blood culture was made in one at least of these cases, and in others the diagnosis was confirmed by complement fixation and agglutination tests.

The first case was that of a farmer. It was found that three of his cows had recently aborted and he had personally attended them. The author remarks on the symptomless nature of the illness apart from the fever which may be high, although at first the patient can go about his work and does not feel much the matter.

Enlargement of the spleen was noted in most of the cases, and in one where there was an accompanying lymphocytosis (81 per cent.),

splenectomy was performed with good result. A description of the histo-pathology of the organ is to be given in a later paper, the principal change noted being numerous aggregations of endothelioid cells.

The author notes that, in Switzerland, as elsewhere, the disease is common among animals but rare in human beings who come into contact with them ; but he believes that mild and abortive cases may be discovered if the agglutination and complement fixation tests are more widely employed. He places more reliance on these two tests for diagnosis than on blood cultures. Amongst his ten cases only one was in a woman who was a clerk in a town and had had nothing to do with cattle but had eaten butter and boiled milk.

Brucella melitensis infection does not occur in Switzerland, where they are only concerned with abortus infection, whereas in other countries, for example, Italy and America, the two infections may exist side by side.

Treatment was symptomatic ; vaccine and serum therapy which were given a trial were of little help.

D. H.

HARDY (A. V.). **Undulant Fever. A Clinical Analysis of One Hundred and Twenty-Five Cases.**—*Jl. Amer. Med. Assoc.* 1929. Mar. 16. Vol. 92. No. 11. pp. 853–860. [5 refs.] [College of Med., State Univ. of Iowa, Iowa City.]

This paper consists of a clinical analysis of 125 cases of infection by *Br. abortus* diagnosed by positive agglutination tests and blood culture. The cases all occurred in the State of Iowa and an epidemiological survey has already been published [*ante*, p. 439].

The author declares that the clinical description which most closely agrees with his impressions of the present series of cases is that of HUGHES made in Malta 35 years ago, and that the typical picture of undulant fever with joint effusions described in most text-books was but rarely met with. [It should be pointed out that HUGHES's description refers to *melitensis* infection whereas the present series were infected with *abortus*.] The general description of the cases is that the onset was slow and gradual, the first symptom being simply one of weakness or " easy tiring," and that both patient and physician were surprised to find that the temperature was 102°, 103° or even 104°, and yet the patient did not really feel ill.* The most characteristic symptom, when the disease was established, was that of night sweats which occurred in practically all the cases. Joint pains were only noted in one-third of the cases and effusion into the joints not at all. The type of fever was intermittent and remittent rather than undulant, although a few very severe cases of the undulant type were met with. Examination of the blood was carried out in only a few cases, and beyond slight anaemia and leucopenia nothing remarkable was noted. In the majority of cases, practically in all, there was some enlargement of the spleen.

The author remarks on the striking variability in the clinical features and course, and suggests that in all cases of indefinite illness with an

* See paper by LÖFFLER (above).

intermittent or remittent type of fever with enlargement of spleen and night sweats an agglutination test should be carried out with cultures of *Br. abortus* and blood culture should be attempted.

D. H.

CHARLES (J. A.) & WARREN (S. H.). **A Further Case of** *Brucella abortus* **Infection in Man.**—*Lancet.* 1929. Feb. 23. pp. 386–388. [9 refs.]

This was a case of fever in a medical man who had not been out of England since 1906, and for the last eight years had been continuously employed in his professional duties in an institute near Newcastle-on-Tyne. He was in the habit of drinking daily about one pint of unboiled milk, which was obtained from a herd of cows kept at the establishment. He had fever for about one month and the original diagnosis was paratyphoid, a diagnosis which was suggested partly by the clinical symptoms and partly by the fact that this blood serum agglutinated an emulsion of para. A. in low dilution ; this latter fact might be explained by an inoculation of T.A.B. vaccine in 1917. Symptoms of insomnia and irritability with profuse sweats were noted and the fever was remittent in type ; a slight degree of orchitis was also noticed. Agglutinations carried out later in the fever gave positive reactions up to a dilution of 1-2,500 with *Br. melitensis* and 1-5,000 with *Br. abortus*. Blood cultures were negative, as were injections of the patient's blood into guineapigs, but the diagnosis may be said to have been clearly established. It was found that one of the cows of the herd from which the patient had obtained the milk had aborted about eight months previously ; some of the secretion from the udder of this cow was obtained and injected into two guineapigs and these were killed a month later. From the organs an organism was obtained on liver extract medium which was culturally, morphologically and serologically similar to *Br. abortus* ; also the serum of the two guineapigs agglutinated *Br. abortus* and *melitensis* to high titre.

D. H.

BETHOUX (L.). Les pseudo-tuberculoses mélitococciques ; contribution à l'étude des formes pulmonaires de la fièvre de Malte. [**Pseudo-Tuberculosis Forms of Undulant Fever.**]—*Presse Méd.* 1929. June 26. Vol. 37. No. 51. pp. 835–836. [1 ref.]

It has been remarked that severe cases of undulant fever with wasting, paleness and severe sweats have been mistaken for phthisis and, indeed, the name " Mediterranean phthisis " has been given to such cases.

With the spread of undulant fever inland from the coast in France, the symptomatology of the cases has somewhat altered, and instead of the general wasting and fever, attention has been drawn to a particular involvement of the lung, also simulating tuberculosis. Four such cases have recently come under the care of the author and are described in detail. Three members of one family fell ill at one month intervals, the son aged twenty-eight, his mother aged sixty-one and an uncle aged seventy. The first case was the most severe, the next less so, and the third least. In all three the chief symptom, apart from a prolonged undulant fever, was in the chest. In the first case it took the form of a pleuro-pneumonia, yet some of the adventitious sounds met with in this type of tubercle were not present ; in the second case a severe cough accompanied by vomiting and resembling whooping cough ; and in the third a congestion of the lung with a mild bronchitis. The agglutinaton reaction for *Br. melitensis* was strongly positive.

D. H.

TOULLEC (F.) & BLANCHARD (M.). Sur le traitement de la mélitococcie par la protéine de *Br. abortus*. [**Treatment of Undulant Fever by** *Br. abortus* **Protein.**]—*Bull. Soc. Path. Exot.* 1929. Mar. 13. Vol. 22. No. 3. pp. 150–152. With 1 text fig.

This was a typical case of undulant fever: reaction of Burnet positive, agglutination positive in 1-200 dilution. On the 22nd day the patient received a single dose of *abortus* endo-protein of Reilly; the following day he had a rigor and a rise of temperature of 104° F., followed by a drop to normal; there was no recurrence of the fever. Thereafter he made a rapid recovery.

D. H.

BURNET (Et.) & CONSEIL (E.). *B. melitensis* et *B. abortus*. Leur pouvoir pathogène pour l'homme et le singe. [*Br. melitensis* **and** *Br. abortus*: **their Pathogenicity for Man and Monkey.**]—*Arch. Inst. Pasteur de Tunis.* 1929. Mar. Vol. 18. No. 1. pp. 21–42. With 5 charts in text. [5 refs.]

The authors are of opinion that the question whether *Br. abortus* and *Br. melitensis* are one and the same or distinct is still an open one.

So far as cultural characteristics, morphology, bio-chemical properties and immunity reactions are concerned, they are apparently identical, although some authors are prepared to find such differences as that *abortus* in primary culture requires a certain degree of anaerobiosis, and EVANS in America says that they can be distinguished by agglutination and absorption of agglutinins.

The authors point out that up to a few years ago it could be said that *melitensis* was pathogenic for man and caused undulant fever, whereas *abortus* caused epizootic contagious abortion in animals and was not pathogenic for man. But in view of recent developments this simple division must be reconsidered. They consider that the property of pathogenicity, however, is one which should be employed in experimental medicine rather than serological tests. And in pathogenicity there is this difference, that *melitensis* is one thousand times more pathogenic for monkeys than *abortus*. Indeed, only enormous doses of *abortus* will produce any effect at all in small monkeys.

The authors then review their experiments of six years ago [this *Bulletin*, Vol. 20, p. 803], which showed that both men and monkeys were immune to inoculations of *abortus* cultures, blood culture being negative and no agglutinins being produced in the serum, and at the same time that these monkeys and men were rendered immune to subsequent inoculations with cultures of *melitensis*, control volunteers who had not previously been inoculated developing the fever. In this connexion it is pointed out that undulant fever is so common in Tunis, and usually so mild, that no difficulty was experienced in obtaining volunteers.

In view of the discovery of cases of undulant fever occurring in countries where "Malta fever" does not exist and which were shown to be due to contact with cattle suffering from contagious abortion, and also since exception had been taken to the results of the previous experiments which were carried out with old laboratory cultures, a new series of experiments was carried out with recent cultures, including some isolated from man which were considered to be *Br. abortus*.

The results of this second series agree with those of the original experiments except that in two monkeys the blood culture was positive

16 days after an enormous dose of *abortus*; but no agglutinins were produced in the serum and there was no fever and all subsequent blood cultures in the same animals were negative, whereas in the monkeys inoculated with *melitensis* a prolonged fever resulted, and blood cultures were positive throughout; also agglutinins were produced in the blood serum.

A table is reproduced showing the results obtained in the case of four volunteers: three men were inoculated with *Br. abortus*, 200,000,000 living germs subcutaneously, and one with the same dose of *melitensis*; before the inoculation the agglutination and melitene reactions were negative.

Strain.	Blood culture.	Fever.	Melitene intradermally.	Agglutination.
1. Cattle—*abortus* ...	— —	None	+ + +	1/500
2. Pig—*abortus* ...	— —	,,	+ +	1/600
3. Man—*abortus* ...	— —	,,	+	1/350
4. Man—*Melitensis*	+ +	Typical fever.	+ + +	1/2000

It will be seen from the table that although no fever was produced by *abortus* inoculation and blood cultures were negative, yet a certain amount of susceptibility was shown as evidenced by the fact that agglutinins were produced and the melitene reaction became strongly positive in two cases. All three volunteers (*abortus*) were subsequently given a test dose (*melitensis*), but no infection resulted.

The authors agree that the results of these experiments are not in agreement with more recent epidemiological experience; they therefore suggest that in countries where both types of infection exist, all doubtful *abortus* cases in man should be excluded, and that as many cultures as possible taken from human cases of *abortus* infection should be inoculated into monkeys, and the results carefully observed and recorded, and also compared with inoculations of *melitensis* in other monkeys.

In this way the question might be settled, are these infections due to: (*a*) *melitensis* derived from cattle; or (*b*) to an *abortus* strain pathogenic for man and monkey?

D. H.

i. Ascoli (M.) & Sanfilippo (E.). Ueber Immunisierung gegen Mittelmeerfieber. III. Mitteilung. [**Immunization against Undulant Fever.**]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1929. Vol. 60. No. 5-6. pp. 422–428. [Refs. in footnotes.] [Med. Clinic, Univ., Catania.]

ii. Sanfilippo (E.). Ueber Immunisierung der Ziege gegen Mittelmeerfieber. IV. Mitteilung.—*Ibid.* 1929. Vol. 61. No. 1/2. pp. 82–84. [Med. Clinic, Univ., Catania.]

i. The result of the authors' experiments on the immunization of goats with *Br. melitensis* is fully set out in tabular form. The method was to inoculate goats subcutaneously with varying doses of killed cultures of the organism. About a month later a test dose of the living organism was given either by the mouth or subcutaneously; with each pair of inoculated animals a control animal was also employed.

A month later the animals were killed and careful cultural examinations of the liver, spleen, bone marrow and kidneys were made. It was found that if the inoculum was less than the washings of six agar plates, a few colonies of *Br. melitensis* could be recovered from the inoculated animals ; but if the inoculating dose consisted of the washings of 10 agar plates or more, the organs of these animals were completely sterile ; whereas in every instance the *Br. melitensis* could be readily recovered in very large numbers from the control uninoculated animals.

The infecting dose by the mouth was three 72-hour living cultures of *Br. melitensis.*

ii. Two goats were immunized in January, 1927, by subcutaneous injection of enormous doses of *Br. melitensis,* killed by heat, the washings of 4, 8 and 18 agar plate cultures being used. In June and July the two animals were given the contents of six living cultures, by the mouth, as a test dose. Two non-immunized controls received the same dose. No reaction followed these doses either in the inoculated or non-inoculated animals. In September the animals were killed and careful cultural examinations made of all the organs. In the inoculated animals all the cultures were sterile, but in the two controls *Br. melitensis* was readily cultivated from the mammary glands, from the mesenteric lymphatic glands and from the bone marrow. It is also noted that in one of the controls, during life, the *Br. melitensis* was cultivated successfully from the milk and also from the bone marrow, but not from the blood. The author is of opinion, therefore, that the inoculation of killed cultures had prevented multiplication of the organism when administered by the mouth within the period of these experiments.

In one experiment the period elapsing between the immunizing and infecting test dose was six months and in the other one year.

D. H.

VOGE (Cecil I. B.). **The Agglutinating Action of Human Blood Serum upon** *B. abortus* **(Bang). (A Preliminary Communication.)**—*Edinburgh Med. Jl.* 1929. Apr. Vol. 36. No. 4. pp. 249–255. [31 refs.] [Animal Breeding Research Dept., Edinburgh.]

The author discusses the literature on the subject especially from the veterinary point of view. He records some results obtained in the agglutination of *Br. abortus* with human sera. One hundred sera were examined and these fell, as a result of agglutination tests, into four groups.

		No. of Sera.
Group 1.	No agglutination at all	15
Group 2.	Slight agglutination in 1 in 2	20
Group 3.	Complete agglutination in 1 in 2 ...	59
Group 4.	Complete agglutination 1 in 10 and over	6

The final titres of these six sera were as shown below.

1. 1:10, trace 1:20.
2. 1:80.
3. 1:20, trace 1:40.
4. 1:20, ,, 1:40.
5. 1:20, ,, 1:40.
6. 1:10, ,, 1:20.

Of the sera, 6 per cent. were taken as positive, the rest as negative.

D. H.

ZANZUCCHI (A.). Dimostrazione sperimentale del potere abortigeno nelle vaccine del batterio melitense. [*Brucella melitensis* **as a Cause of Abortion in Cows.**]—*Giorn. di Clin. Med.* 1929. June 10. Vol. 10. No. 8. pp. 507–510. [4 refs.] English summary p. 513. [Inst. General Path., Univ., Parma.]

The author obtained a culture of *Br. melitensis* from a human case of undulant fever in Sicily. He confirmed the nature of the organism by morphological, cultural, biological and serological characters, by Burnet's thermo-agglutination, Vercellana and Zanzucchi's lactic acid, and Lusena's peptone reactions ; moreover, in the district where this case occurred there is no epizootic abortion.

He injected 2,000,000,000 organisms intravenously into four cows 4–6 months pregnant, obtained from an abortus-free district and carefully protected from subsequent infection. Abortion occurred 80 and 88 days afterwards in the first two, and 52 and 66 days in the second two. The bacillus was isolated from the placental exudate, the uterus of the mother and the fourth stomach of the foetus.

H. Harold Scott.

CUATRECASAS (J.) & GARCÍA TORNEL (L.). Un probable caso de fiebre de Malta con fracturas espontáneas.—*Rev. Méd. Barcelona.* 1929. Feb. Year 6. Vol. 11. No. 62. pp. 106–109.

DENGUE.

BLANC (Georges) & CAMINOPETROS (J.). Quelques observations épidémiologiques faites aux environs d'Athènes pendant l'épidémie de "dengue." L'enseignement qu'on en peut tirer. [**Epidemiological Observations made near Athens in the Dengue Epidemic.**]—*Rev. d'Hyg. et de Méd. Préventive.* 1929. Mar. Vol. 51. No. 3. pp. 161–171. With 8 text figs. [12 refs.] [Pasteur Inst., Athens.]

The authors have already shown by carefully controlled experiments in the laboratory that dengue can be conveyed from man to man by the mosquito *Stegomyia fasciata* (*Aëdes argenteus*) and also that the same species of mosquito, caught in houses where dengue is present, is capable of conveying dengue to susceptible volunteers. They here bring forward epidemiological evidence which also incriminates this insect.

On the road from Athens to Eleusis, about three miles distant from the city, a large factory is situated which employs about 150 men, who live on the premises with their families, in all about 400 individuals. Dengue broke out in this community and practically every one suffered from it. A mile further along the road is situated a large lunatic asylum of 16 pavilions, with a population of about 700. One or two cases occurred here among the warders and doctors who had visited Athens, but there was no spread of the disease. Half-a-mile further on is a poor village of about 400 refugees; here also there were a few cases of dengue but no spread.

On making a survey of these three places, the authors found that at the factory the water was brought to the houses in an open canal and stored in open cement basins in small wash-houses attached to the dwellings; in these basins they found innumerable eggs and pupae of Stegomyia, and numerous adult mosquitoes were found in the houses. At the asylum, on the other hand, the water is brought in closed pipes to a large cement reservoir which is completely closed; from this the water is piped to closed metal cisterns at each pavilion, and the mosquitoes have no place to breed—result, no Stegomyia found in the grounds or buildings, and no dengue. A few Culex mosquitoes were caught and sand flies were very plentiful. At the refugee village, water was not piped but was brought in carts and run into large metal petrol drums, the aperture being then closed with a wooden plug and water drawn off from a tap; no breeding place for Stegomyia, no mosquitoes found, and no dengue. Here also Culex mosquitoes were found and very numerous sand flies.

D. Harvey.

CARDAMATIS (Jean P.). La dengue en Grèce. [**Dengue in Greece.**]—*Bull. Soc. Path. Exot.* 1929. Apr. 10. Vol. 22. No. 4. pp. 272–292. [1 ref.]

The author studied an outbreak of dengue in the town of Aegina of about 3,000 inhabitants, situated on the island of the same name. The infection was imported from Athens and the Piraeus. He has reached conclusions which are at variance with generally accepted

views. As regards the etiology, he gives a full account of the bionomics of Stegomyia and Phlebotomus, published by him in 1907 and 1908. Clinically the most constant symptom was haemorrhage; he also observed that an outbreak of dengue lit up an attack of malaria in those who had already suffered from this disease.

Epidemiology.—(*a*) During the outbreak of dengue in Athens, Stegomyia and Phlebotomus appeared to be present in about equal numbers; on the other hand, in Aegina the proportion was 50 Phlebotomus to 1 Stegomyia.

(*b*) A curve of the numbers of these insects followed closely the curve of the number of cases of dengue.

(*c*) The geographical distribution of the cases of dengue coincided with the distribution of these insects.

(*d*) Stegomyia was not seen at any place of a greater altitude than 1,200 metres, but Phlebotomus might be found at 1,650 metres; yet cases of true dengue and 3-day fever were met with in Greece in 1928 at places 2,000 metres above sea level.

(*e*) The grave and fatal cases were met with in the hottest time of the summer, and it is suggested that this was due to a great multiplication of the virus in the insect vector.

Etiology.—(*a*) Apart from *P. papatasii* and *S. fasciata*, which have up to now been considered the only transmitters of dengue, it is probable that still other factors, or even conditions, unknown up to this time contribute to the propagation of the malady.

(*b*) Until the true microbic cause of 3-day fever and dengue have been discovered in the laboratory, and in view of the fact that clinically these diseases are so similar, we must admit, for the time being, their unity or, at any rate, their close relationship.

(*c*) The author is of opinion that the causes of dengue and 3-day fever are one and the same and that the character of the clinical manifestations depends on the development of the virus in two different insects; and that, as a result, the mild cases of short duration are due to *P. papatasii*, whereas the severe cases of longer duration are caused by the bite of *S. fasciata*.

The author thinks that the experimental work in Athens and elsewhere, which went to show that Stegomyia is the sole transmitter, has not finally closed the argument.

D. H.

MACRIDI (Nicolas G.). L'épidémie de dengue à Athènes. [**The Dengue Epidemic at Athens.**]—*Rev. d' Hyg. et de Méd. Préventive.* 1929. Apr. Vol. 51. No. 4. pp. 241–267.

This is a long report to the Ministry of Health on the epidemic of dengue in Athens in 1927–1928. In 1927 the disease did not break out till October, the epidemic was mild and of short duration, whereas in 1928 the outbreak, which commenced in the same district, occurred in July and therefore the climatic conditions were favourable for its spread and continuation over a much longer period. A full description of the clinical symptoms is given under the various systems, digestive, nervous, circulatory, etc., and the influence of the disease on certain pathological states, such as tuberculosis, syphilis, malaria, is discussed. In the few post-mortem examinations held on people who had died of dengue without any complicating disease, a condition of hyaline degeneration of the cardiac muscle was noted, accounting for the slow

pulse met with during life. The experimental work carried out at the Pasteur Institute in Athens is also referred to and a summary of the bionomics of the Stegomyia mosquito is given.

D. H.

OEKONOMIDES (Georg D.). Erfahrungen beim Denguefieber. [**Experiences of Dengue.**]—*Med. Klin.* 1929. Mar. 1. Vol. 25. No. 9 (1264). p. 346.

The author, who had a vast experience of the diagnosis and treatment of dengue during the epidemic in Athens in 1927–1928, gives a full account of the chief symptoms of the disease and also discusses the treatment, which in the absence of a specific drug must be merely symptomatic.

Such elaborate clinical descriptions can be built up from experience of many cases, but the difficulty of diagnosis still remains when isolated and atypical cases are met with at the beginning of an outbreak.

D. H.

VERAS (Solon). La fièvre dengue chez les enfants pendant l'épidémie d'Athènes de 1927–1928. [**Dengue in Children in the 1927-28 Athens Epidemic.**]—*Arch. Méd. des Enfants.* 1929. Jan. Vol. 32. No. 1. 19 pp. With 10 figs. [12 refs.]

The author briefly discusses the epidemiology and etiology of dengue. He notes that very careful examination of the blood of many cases failed to demonstrate the spirochaete of COUVY. He gives a graphic description of an attack from which he himself suffered and states that there is no marked clinical difference between dengue in adults and in children. Dengue occurred in quite young children; as young as 5, 8 and 9 days. The rash is not constant, it is polymorphic and may resemble that of scarlet fever, or of measles, or may be mixed. The slow pulse of adults is rare in children; in the very young a rate of 120–160 may be found, and in older children from 80 to 120. No cases of jaundice were seen. Two cases relapsed after 8 days. Particulars of ten selected cases are given with the temperature charts.

D. H.

PAPADOPOULO (Thésée), YOEL (M.) & HADJIGEORGES (A.). Sur les complications chirurgicales de la dengue observées dans ces services. [**Surgical Complications of Dengue.**]—*Presse Méd.* 1929. Jan. 12. Vol. 37. No. 4. pp. 49–51.

The authors give an account of the surgical complications of dengue, which were met with in the course of their hospital practice during the recent epidemic. A list is given as follows: Inflammation of tonsils, in some cases followed by abscess formation; inflammation of the parotid gland and also of lymph glands in various sites necessitating

opening of abscesses; osteomyelitis; whitlow; phlebitis. Each of these complications is discussed in a paragraph and illustrative cases are cited. Four patients died of septicaemia following on inflammation.

D. H.

ARAVANTINOS (John). **Hospital Observations on Dengue Fever. Dengue's Effects on the Kidneys.**—*Arch. Méd. Belges.* (*Bull. Internat., Jl. Internat., Congress of Military Med. & Pharm.* 2nd Year. No. 3.) 1929. Mar. Vol. 82. No. 3. [English & French version on alternate pages.] pp. 162–170. [Milit. Path. Hosp., Athens.]

These observations were made by the author in the military hospital at Athens, during the epidemic in 1927 and 1928. He notes that about 60 per cent. of his patients showed some degree of simple albuminuria during the fever, and this condition may persist for a week afterwards; other symptoms, suggesting that the organism of dengue or its toxin attacks the kidneys, are extreme pain in the loins and hips, vomiting and shivering, with occasional difficult breathing. In persons who are the subjects of acute or chronic Bright's disease, an attack of dengue may aggravate the disease and casts may reappear in the urine, and if the heart also is affected, the condition may be critical, and a fatal issue may supervene.

D. H.

CHANIOTIS (N.) & SCORDOMBEKIS (E.). Tuberculose et dengue: étude clinique. [**Tuberculosis and Dengue.**]—*Presse Méd.* 1929. Mar. 30. Vol. 37. No. 26. pp. 419–421. [4 refs.]

This paper deals with the effects of an attack of dengue in tuberculous subjects. A study of 1,500 cases coming under the care of the authors, was made and the cases were divided into four categories as shown below.

1. Patients who had never shown any signs of tubercle previous to the attack of dengue.
2. Patients who had a history suggestive of tubercle.
3. Dengue patients who were known to be suffering from latent tuberculosis.
4. Dengue patients who had active tubercle at the time.

Of class one, comprising some 1,400 cases, nine developed tubercle. Of class two (32 cases) three developed tubercle; the remainder showed no sign of any change.

Class three (12 cases); one showed a recrudescence of latent tuberculosis; the remaining eleven showed no change.

Class four (56 cases); in three cases of very active caseous tuberculosis of the lung, aggravation was noted during the attack of dengue and two died in a short time.

A table is given of 17 cases in class four, out of a total of 56, which were adversely affected by the attack of dengue; these were mostly cases of open tubercle, and ulcerative and not fibrous. In the remaining 39 cases of active tuberculosis, there was no alteration in the condition.

Conclusions.—Dengue, being a fever of short duration, has little effect in provoking or aggravating tubercular attacks ; it is less tuberculogenic than, say, measles.

D. H.

PAPANIKOLAU (B.). Denguefieber und Lungentuberkulose. [**Dengue and Tuberculosis.**]—*Zischr. f. Tuberkulose.* 1929. Mar. Vol. 53. No. 2. pp. 107–111. [6 refs.]

The author gives his experience of the effect of dengue on tuberculosis. He cites the case of a young girl with a family history of tuberculosis who, after an attack of dengue, developed an acute infection of the lung with continued fever and tubercle bacilli in the sputum. So far as his experience went, an attack of dengue had no effect whatever on people actually suffering from phthisis nor did it cause recrudescence in recovered and latent cases of tubercle.

D. H.

MOUTOUSSIS (Konstantin). Befunde von rickettsiaartigen Gebilden und Einschlüssen in mit Denguefiebervirus infizierten Stegomyien. [**Rickettsia Forms and Inclusions in Stegomyia infected with Dengue Virus.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1929. June. Vol. 33. No. 6. pp. 330–333. With 2 coloured figs. on 1 plate.

In the end of September, 1927, the author collected 15 Stegomyia from a house in Greece where there were six cases of dengue. He examined the stomach contents by staining smear preparations with Giemsa. In three of the mosquitoes he found small red-staining bodies similar to *R. prowazeki.* He continued these experiments in 1928, using laboratory-bred mosquitoes. He fed female mosquitoes four days after hatching out on dengue patients in the first 48 hours of the disease. He kept the mosquitoes alive on sugar-water and found that they became infective for man about ten days after the infecting feed and remained infective during their life.

He stained smear preparations of these infective mosquitoes with Giemsa and found very numerous Rickettsia-like bodies. Stegomyia which had not been fed on dengue patients did not show these bodies nor did Culex or sand flies even when so fed.

Two coloured plates are given, one showing Rickettsia-like bodies lying free and the other showing the same bodies lying in the blue protoplasm of cells. No bodies could be found in the salivary glands of infective mosquitoes.

D. H.

JOANNIDÈS (Georges Sp.). L'examen morphologique du sang dans la fièvre dengue. [**The Blood in Dengue.**]—*Athènes Méd.* 1929. Jan. 4 pp. [11 refs.]

Blood films were fixed in alcohol and stained with Giemsa. The red cells showed no change and no parasites were seen in them. In the

large mononuclears the nuclear substance is condensed and the contour of the nucleus no longer sharp, and large chromatin lumps can be seen in the protoplasm. In the polynuclears the nuclear substance is also condensed in places and in some the nucleus is broken up into several fragments or vacuolated and the granules may disappear.

It is suggested that these changes may have been artificial, but films prepared from healthy people and from cases of fever other than dengue did not show them; and the changes were most marked in severe cases of dengue.

The author suggests that dengue should be considered as leucotoxic and therefore laying the patient open to secondary infections.

D. H.

BLANC (Georges), CAMINOPETROS (J.), DUMAS (J.) & SAENZ (A.). Recherches expérimentales sur la sensibilité des singes inférieurs au virus de la dengue. [**Experiments on the Susceptibility of Monkeys to Dengue.**]—*C. R. Acad. Sci.* 1929. Feb. 4. Vol. 188. No. 6. pp. 468–470.

The authors inoculated monkeys of various species—Macacus, Cercopithecus, etc.—with blood from patients suffering from dengue. None of the monkeys showed any rise of temperature or symptom of illness, yet after an incubation period of from 5 to 8 days their blood when inoculated into susceptible human volunteers gave rise to attacks of typical dengue; the blood was not infective after the 12th day, or before the 5th. These monkeys, whose blood had been shown to be infective, if re-inoculated with fresh infective blood from cases of dengue showed no symptoms and their blood did not become again infective for man, thus showing that they had acquired immunity.

The blood of monkeys which had suffered from "inapparent" dengue was proved to be non-infective for other monkeys. This phenomenon falls into line with experiments on "inapparent" or symptomless typhus in guineapigs.

[That is, it is not possible to produce inapparent typhus or dengue in the same species of animal in series.]

D. H.

BLANC (Georges) & CAMINOPETROS (J.). Durée de conservation du virus de la dengue chez les Stégomyas. L'influence de la saison froide sur le pouvoir infectant. [**Duration of Maintenance of Dengue Virus in Stegomyia. Influence of Cold Season.**]—*C. R. Acad. Sci.* 1929. May 6. Vol. 188. No. 19. pp. 1273–1275. [2 refs.]

The authors succeeded in keeping Aedes mosquitoes alive for seven months. They were shown to be infective up to January 15th, ceased to be so during February and March, and again became infective in April. It was found that at temperatures below 18° C. the mosquitoes ceased to be infective. The greatest duration of infectivity was 174 days. Also mosquitoes captured in dengue houses gave the same results, i.e., they caused infection in November, but not in January, February or March, but again became infective in April.

Laboratory-bred mosquitoes experiment :—
Fed on December 22nd on case of dengue.
Fed on March 1st. No infection 69 days.
Fed on March 11th. No infection 79 days.
Fed on April 5th. + + 104 days.

D. H.

BLANC (Georges), CAMINOPETROS (J.) & GIROUD (P.). Action du sérum antiamaryllique et du sérum contre la peste porcine sur le virus de la dengue. [**Action of Anti-Yellow Fever Serum and Hog Cholera Serum on Virus of Dengue.**]—*Bull. Acad. Méd.* 1929. Mar. 27. Year 93. 3rd Ser. Vol. 101. No. 12. pp. 442–444. [4 refs.] [Pasteur Inst., Athens.]

The close analogy between yellow fever and dengue has often been noted, and dengue has been described as a mild form of yellow fever. Haemorrhages, black vomiting, jaundice and albuminuria are met with in both diseases.

An anti yellow-fever serum has been produced in horses by inoculations of virulent liver from monkeys. A monkey infected with yellow fever was killed and a fragment of liver rubbed up with sand and treated with formalin. A rabbit received three intraperitoneal injections at 10 day's interval and 10 days later blood was drawn off and serum taken.

Several volunteers were given doses of this serum and subsequently doses of infective serum taken from dengue cases, but all developed dengue. As this yellow fever serum had been shown to be active against yellow fever virus it would appear that dengue virus and yellow fever virus are distinct and separate.

A hog cholera serum was also of no avail in the prevention of dengue.

D. H.

BLANC (Georges) & CAMINOPETROS (J.). La dengue donne-t-elle l'immunité ? [**Does an Attack of Dengue confer Immunity ?**]—*C.R. Soc. Biol.* 1929. Jan. 11. Vol. 100. No. 1. pp. 31–33. [5 refs.] [Pasteur Inst., Athens.]

Most people agree that an attack of dengue confers immunity, but SILER and his co-workers say they were able to reinfect volunteers experimentally.

In the months of February and March, 1928, Blanc and Caminopetros inoculated numerous volunteers (90) ; 25 of them developed experimental dengue. Twenty remained in hospital in December, 10 months later. These people were exposed to natural infection in hospital with other cases, but all escaped. Nine of them were re-inoculated with heavy doses of infective blood and none reacted, whereas the controls did.

MANOUSSAKIS' experiments agreed with the above results. [*ante*, p. 41.]

People who had dengue in 1927 in the great majority of cases escaped in 1928.

In the author's opinion dengue confers a high degree of immunity which is of considerable duration.

D. H.

BLANC (Georges) & CAMINOPETROS (J.). Action du sérum et du sang total des convalescents et guéris de dengue sur le virus. [**Action of Serum and Whole Blood of Convalescents from Dengue on the Virus.**]—*C.R. Soc. Biol.* 1929. Feb. 15. Vol. 100. No. 6. pp. 393–395. [2 refs.] [Pasteur Inst., Athens.]

The authors agree with MANOUSSAKIS and others, that one attack of dengue confers a lasting immunity. But has the serum of these immune people any effect on the virus ? And can it confer passive immunity on others?

As the result of experiment they find that the serum of immune people has no neutralizing effect either if injected before or with the virus or if left in contact with the virus before injection, either at 0° C. or 37° C. It did not matter whether the serum was taken during the attack, at the end, or one, six or ten months later.

They then tried the whole blood. Whole blood of convalescents was injected into volunteers followed by a test dose of infective blood ; a typical attack of dengue followed. This experiment was repeated several times with variations as to time of taking the blood, but no protective power was shown.

Conclusions.—Neither serum nor whole blood of convalescents from dengue has any neutralizing or protective power against the virus of dengue.

D. H.

SCHRUMPF-PIERRON (P.). Les complications fatales de la dengue. [**Fatal Complications of Dengue.**]—*Presse Méd.* 1929. Feb. 13. Vol. 37. No. 13. pp. 206–207.

An account of dengue in Egypt in 1928. Probably 30 per cent. of the population were affected. One of the first epidemics described was that of 1779 in Cairo ; the name " mal des genoux " was then given to the disease on account of the " break bone " pains. It is generally agreed that the disease is only rarely mortal, but in Athens recently many deaths have been reported and people in Egypt were naturally somewhat disturbed. The author discusses the chief complications which might cause a fatal issue ; hyperpyrexia, haemorrhages, severe vomiting, and albuminuria caused no deaths, in his experience. Two deaths from syncope 24 hours after defervescence were brought to notice ; both showed bradycardia. Atropine and rest in bed should save all such cases.

Conclusions.—It is most exceptional for dengue to be fatal in itself, however violent the symptoms. The author saw no deaths although called in consultation in many severe cases. Five thousand cases were admitted to hospital in Cairo with only one death in an old woman of 73 some days after fever had ceased. Mortality rate 1-5,000–1-10,000.

[CARDAMATIS gives the mortality rate in Greece as 1 in 61,000.]

D. H.

GOLDIE (Horatio). **Notes on the Epidemic of Dengue in Tiberias.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Jan. 30. Vol. 22. No. 4. pp. 385–390. [4 refs.]

In practically all the cases seen in an outbreak of dengue in Tiberias there was a double rise of temperature with a day or so of normal

temperature between. The author also notes, as did MILLER (below), that there was usually an enlargement of the superficial lymphatic glands. Careful total and differential counts of the white blood cells were made in nearly 200 cases, and the interesting points brought out were that at the beginning of the fever there is, as a rule, a leucopenia followed later by an increase in the lymphocytes, which usually disappeared at the end of the first stage of fever; this was followed by a mononucleosis during the afebrile period and in the second stage of fever; accompanied later, when the secondary rash appeared, by some increase in the eosinophile cells.

The author notes the similarity between the symptoms of the secondary fever stage with those of serum disease, and suggests that this phase may be of the nature of an anaphylactic condition. Acting on this hypothesis, he treated a number of cases with atropin, 0·5 cc. of 1-1,000 solution, and calcium chloride in doses of 60 grs., for five days, with excellent results. In most of the treated cases the secondary phase was either very slight or non-existent.

D. H.

MILLER (J. E.). **Dengue. A Study Based on 100 Cases.**—*U.S. Nav. Med. Bull.* 1929. Jan. Vol. 27. No. 1. pp. 77–86.

In the author's experience dengue was a five-days fever in 100 per cent. of his cases. In the Philippines, where the author has studied the disease, there is no doubt that the Aëdes mosquito is the vector. The disease in these islands is more prevalent in the cities than in the country districts; the opposite is true of malaria. A Mosquito Control Commission has been constituted and the chief measures advocated are filling in the low lands and the removal of domestic breeding places, such as old pots, pans, jam jars, etc.

Enlargement of lymphatic glands was noted in 75 per cent. of the cases; symptoms of an involvement of the sensory nerves was evidenced by the acute pains in the legs and arms and backache. It is suggested that an examination of the cerebro-spinal fluid might be of interest. The rash of dengue is macular rather than punctate, and it is darker than that of scarlet fever, but lighter than that of measles. When the rash first appears, about the fourth day, there is a feeling of tingling and numbness, "as if insects were creeping under the skin." Mild ambulatory cases are common, but even in these the tender enlarged lymphatic glands can be detected. The absence of Koplik's spots and coryza serve to distinguish from measles.

The treatment is symptomatic, but great relief was obtained from the use of codeine for the acute pains.

D. H.

CARTRON (A.). Note sur une épidémie de dengue à Saint-Louis (Sénégal) en 1926. [**Dengue Epidemic at Saint Louis in 1926.**]—*Bull. Soc. Path. Exot.* 1929. Mar. 13. Vol. 22. No. 3. pp. 228–229.

One hundred cases of dengue which differed somewhat from the classical description. The most prominent symptoms were sub-orbital neuralgia, five-days fever, slow pulse, an indeterminate rash appearing on the third day, loss of appetite and weakness.

D. H.

POGGI (Igino). Note cliniche sul decorso di una epidemia di dengue in Rodi. [**An Outbreak of Dengue on Rhodes Island.**]—*Arch. Ital. Sci. Med. Colon.* 1929. Feb. 1. Vol. 10. No. 2. pp. 72–77. With 1 chart in text. English summary p. 78. [Inst. of Trop. Path., Univ., Bologna.]

Seventy cases were notified in a regiment stationed in Rhodes in the summer of 1928 and many others occurred. All were apparently mild, but otherwise typical, showing none of the anomalies recorded in the epidemic at Athens.

H. Harold Scott.

ROSENBERG (Max). Die Dengue in ihren Beziehungen zu Malaria. [**Dengue in Relation to Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1929. July. Vol. 33. No. 7. pp. 398–399.

The author considers the question whether malaria does or does not influence an attack of dengue. Unfortunately, only thirteen cases were available. He noted that in eight of these, all suffering from malignant tertian malaria, the initial rash was absent, but in no other respect could he detect alteration in the symptoms.

D. H.

BERGER (E.). Das Denguefieber und der Verlauf der Epidemie in Griechenland im Sommer 1928.—*Schweiz. Med. Woch.* 1929. May 11. No. 19. pp. 498–501. [19 refs.] [Hyg. Inst., Univ., Basle.]

BLANC (G.). Remarques à propos de la note de M. Manoussakis "Quelques recherches expérimentales sur la dengue."—*Bull. Soc. Path. Exot.* 1929. Feb. 13. Vol. 22. No. 2. pp. 68–69. [1 ref.] [Pasteur Inst., Athens.]

GABBI (Umberto). Sulla febbre dengue in Grecia nel 1928.—*Giorn. di Clin. Med.* 1929. Apr. 30 & May 20. Vol. 10. Nos. 6 & 7. pp. 335–338; 341–344; 347–350; 353–354; 407–410; 413–416; 419–422; 425. With 8 figs. & 1 map.

MANOUSSAKIS (E.). Quelques recherches expérimentales sur la dengue. A propos de la communication G. BLANC, J. CAMINOPETROS et E. MANOUSSAKIS.—*Bull. Soc. Path. Exot.* 1929. Jan. 9. Vol. 22. No. 1. pp. 22–23.

UNCLASSED FEVERS.

CONSEIL (E.). La fièvre boutonneuse de Tunisie et la fièvre exanthématique de Marseille. Leur identité.—*Bull. Acad. Méd.* 1929. Jan. 15. Year 93. 3rd Ser. Vol. 101. No. 2. pp. 74–76.

——. La fièvre boutonneuse. Son identité avec l'erythème infectieux ou fièvre exanthématique de la région Marseillaise et la febbre errutiva d'Italie. [**Identity of "Fièvre boutonneuse," Exanthematous Fever of Marseilles, and Italian Eruptive Fever.**]—*Arch. Inst. Pasteur de Tunis.* 1929. Mar. Vol. 18. No. 1. pp. 86–132. With 6 charts. [48 refs.]

After a visit to Marseilles, where he saw several cases of eruptive fever, Conseil is convinced that this is identical with a disease known in Tunis since 1910 and called "fièvre boutonneuse." In his opinion the name "fièvre boutonneuse" should be retained for this disease wherever it occurs. This name, suggested by Ch. NICOLLE, indicates the two chief features of the disease, fever and an eruption which can be felt under the skin like small buttons.

An historical account is given, and it is shown that the first cases were noted by CONOR and BRUCH in 1902 near Tunis, and described

by them with other cases in 1910. Similar cases have been described in Roumania, in Tripoli, and in Italy and France.

A very full clinical account follows, and special interest attaches to the description of the " tache noire " or primary sore ; this is described as a small rounded blackish scar, about the size of the head of a pin or a small pea, not painful ; it may be situated on any part of the body, usually the lower limbs ; usually also the glands draining the area are slightly enlarged. The rash appears first on the abdomen as small rose spots, slightly raised on an indurated base ; the lesion, says the author, is neither a macule nor a papule, but is best described by the vague term button ; hence the name of the fever. There are successive crops of these spots, which at first are not numerous, and are restricted to the abdomen, chest, and front of the limbs, but in a day or two they increase in numbers and spread to the face and to the palms and soles. The rash persists even after the fever has ceased. The various signs and symptoms are discussed in detail.

As regards the question of the identity of exanthematous fever (Marseilles) and eruptive fever (Italy) with the " fièvre boutonneuse," the author has collected the various descriptions of these diseases by different authors and gives them in full, and it will be seen that these accounts agree, as he says, practically word for word.

About laboratory research he has not much to say ; blood culture has been invariably negative, as also have agglutination tests with *typhosus* and *melitensis*. For the Weil-Felix reaction the author is of opinion that since this is not a specific reaction, not much reliance can be placed on it. A few of the Marseilles cases gave a positive reaction, but only in low dilution. The author's view is that these results should be looked on as an interesting observation but without value as regards the diagnosis or the nature of the malady.

The author points out that monkeys are susceptible to inoculation with blood taken between the 3rd and 9th day of the disease, and that guineapigs are resistent, yet guineapigs which have been inoculated with blood from cases of Marseilles fever are susceptible to inoculation with typhus virus.

As regards the etiology the author is inclined to agree with Olmer that the disease may be carried by the dog tick (*Rhipicephalus sanguineus*). He found no lice on his cases and he is convinced that the disease is not infectious as is measles or small-pox. This is a strong point in the differential diagnosis. The rash and its persistence, also the length of the fever, distinguish it from dengue.

The author then is of opinion that " fièvre boutonneuse " is a definite clinical entity distinct from typhus and Brill's disease, but one and the same with exanthematous fever and eruptive fever, and that the original name should be retained.

D. Harvey.

Trabaud (J.). La fièvre boutonneuse de Tunisie, la fièvre exanthématique de Marseille et la dengue de Grèce et de Syrie ou dengue méditerranéenne. Leur identité probable. [**Probable Identity of "Fièvre boutonneuse," Eruptive Fever and Dengue.**]—*Bull. Acad. Méd.* 1929. Apr. 23. 93rd Year. 3rd Ser. Vol. 101. No. 15. pp. 528–533. [2 refs.]

The author after perusing Conseil's paper is of opinion that the diseases described by the latter are really dengue. He compares in

parallel columns the descriptions of "fièvre boutonneuse" as given by CONSEIL and the description of dengue as given by DE BRUN and SACORRAFOS, taking first of all the fever and then the rash, the joint pains and the slow convalescence; he also points out that both diseases occur in the summer. The only differences are the length of fever and the "tache noire" which, in Trabaud's opinion, is such a minor incident that it might readily escape notice in a patient covered with a rash. He considers that the cases in Tunis and Marseilles are but outposts of general epidemics of dengue.

[No mention of animal experimentation or Weil-Felix reaction.]

D. H.

BURNET (Et.) & DURAND (P.). Place de la fièvre exanthématique (=fièvre boutonneuse) dans le groupe des fièvres indéterminées. [**Eruptive Fever placed in the Group of Unclassed Fevers.**]—*Bull. Soc. Path. Exot.* 1929. Feb. 13. Vol. 22. No. 2. pp. 85–94. [Refs. in footnotes.]

A plea for placing the eruptive or exanthematous fever of Marseilles among the unclassed fevers. The authors consider that it comes somewhere between true typhus and Japanese river fever and might be classed with so-called tropical typhus and "tick" typhus of India, which it resembles in many particulars, including the "tache" or primary ulcer; another point of similarity is that the rash is to be found on the palms and soles. The authors again enumerate the points which distinguish this fever from true typhus and also from Brill's disease. These are, absence of lice; Weil-Felix reaction negative; the blood infective for monkeys but not for guineapigs; monkeys which have been infected with blood from these cases still react when injected with typhus blood; and vice versa, that is, monkeys which have reacted to typhus blood will, if subsequently inoculated with blood from cases of Marseilles fever, again react. The authors are convinced that the so-called "fièvre boutonneuse" is identical with the Marseilles fever.

D. H.

DUNAN (Jean). Au sujet de l'exanthème infectieux méditerranéen appelé aussi fièvre exanthématique du littoral. [**Eruptive Fever of the Mediterranean.**]—*Rev. Méd. de France et des Colonies.* 1929. Jan., Feb. & Mar. Vol. 6. Nos. 1, 2 & 3. pp. 3–33; 65–94; 117–148. [4 pages of refs.]

This voluminous paper, published in three parts, consists almost entirely of a review of the literature on the subject of "eruptive fever," and the majority of the papers referred to have already been reviewed in this *Bulletin.*

The author considers that the first person to identify the disease was Dr. ROCHE, of Avignon, who told him personally that for thirty years he had been accustomed to see, every summer, a few cases of this fever. MARTINI, of Aubergne, noted a case about 1910, and FOURNIER in 1917 noted cases of this disease at Cannes, and from that date cases

have been occurring every summer. But CARDUCCI,* of Italy, was the first to publish an account of the disease. He had collected sixteen cases from 1910 to 1920.

But it was not till 1922 that many cases were seen in Marseilles and its suburbs, and up to 1927 the cases have gradually increased in number, although always scattered throughout the city.

Follows then detailed clinical descriptions by various authors, French and Italian, of cases of this disease. Some of these have already been published and others are taken from the hospital records and notebooks of practitioners.

These descriptions are then analysed by the author and a composite picture of a typical case presented; this is followed by a clinical description of Brill's disease, since these two diseases are often confused and some medical men believe that they are one and the same. Some mention is also made of tropical typhus, Rocky Mountain fever and Japanese river fever.

It is pointed out that, so far, the Weil-Felix reaction is constantly negative in the Marseilles fever and positive in Brill's disease and in tropical typhus. A review of some of the literature concerning the Weil-Felix reaction follows; some interesting observations were made by the author, who tested the serum reaction of several cases convalescent from true typhoid fever (*Bact. typhosum*). Three strains of *Proteus* were used, one being the strain, Kinghorn, used by FLETCHER in Malay. The author found that the serum of several of these cases agglutinated this strain in a dilution of 1-100 to 1-200. He therefore considers that results of this order should not be accepted as diagnostic.

The author finally gives certain reasons for considering that the Marseilles disease is a disease *sui generis* and not Brill's disease.

1. There are definite clinical differences.
2. Inoculation and immunity reactions in animals separate the diseases.
3. The Weil-Felix reaction is strongly positive in Brill's disease and not so in Marseilles fever.

The following conclusions are arrived at:—

The disease recently described is not a new disease; it has occurred in the neighbourhood for many years.

There are definite and indisputable clinical differences between Marseilles fever and Brill's disease, and also the other forms of exanthematous typhus.

Guineapig inoculations have invariably been negative, whereas this is the only indisputable method for the identification of true typhus.

More research is necessary to establish the true etiology and nature of this malady.

D. H.

DUNLOP (George A.). **Pyrexia of Seven Days' Duration of Undetermined Origin.**—*Malayan Med. Jl.* 1929. Mar. Vol. 4. No. 1. pp. 6–8. With 4 figs. [7 refs.]

This outbreak occurred in Kuala Lumpur between March 19th and April 20th, 1928.

The cases described were all in Europeans; but a similar fever occurred in a group of Malay agricultural workers at the same time. The cases (8 in all) were at first diagnosed as influenza, but experience threw doubt on this diagnosis. The onset was sudden, with headache,

* CARDUCCI. *Rivista Ospedaliere.* 1920.

chill and sweating, but no rash and no jaundice; the pulse was slow compared with the temperature; there was no enlargement of the spleen and no malarial or other parasites were found in the stained films of blood. The disease was apparently infectious, since in at least two instances several cases arose in the same family. The suggestion of leptospiral infection is made, but, unfortunately, no attempt was made to cultivate from the blood nor to inoculate experimental animals. If similar cases should be met with, attempts at culture could be made early in the fever.

D. H.

RAO (S. Sundar). **The History of Tick-Bites in Cases of Tick-Typhus in India.**—*Indian Med. Gaz.* 1929. Feb. Vol. 64. No. 2. pp. 76–77. With 1 text fig. [1 ref.] [Calcutta School of Trop. Med., Calcutta.]

This paper gives the distribution of tick-typhus in India. The author points out that although there has been a history of tick bite in some only of the cases, yet tick bite was possible in all, i.e., the cases occurred in persons who had recently been exposed to such risk in jungle or in camp. He notes, too, that there is a great probability of ticks and their bites being overlooked, and cites two cases in support of this contention. An educated man employed on the geological survey returned after a journey in tick-infested country; in spite of careful bathing and change of clothing it was only 17 days later that he discovered a tick deeply embedded in the skin of the thigh. In the other case, an entomologist carefully removed and identified several ticks, and after washing and bathing considered himself free, but 8 days later found one embedded in the skin.

Neither of these men contracted tick-typhus, but the author's point is, that if these two people who were on the outlook for ticks failed to notice the bites and did not discover the ticks until several days had elapsed, little reliance can be placed on the statement, "no history of tick bite," in cases of tick-typhus.

In all cases of tick-typhus in addition to enquiry for a history of tick bite a very careful examination of the patient should be made, and the ticks, if found, should be identified. Small ticks may be almost completely embedded in the skin if they have been attached to the patient for any length of time.

D. H.

SMITH (S.). **The Abortive Fevers of the East.**—*Jl. Roy. Army Med. Corps.* 1929. June. Vol. 52. No. 6. pp. 419–423. [3 refs.]

The author in his capacity as medical officer in charge of the Malaria Treatment Centre, Kasauli, has had unique opportunities of studying records of soldiers suffering from short fevers. He quotes freely from a paper by Heatly SPENCER, already summarized in this *Bulletin.* He pleads for "some diagnostic pigeon hole" for febrile attacks lasting from one to seven days, which fit into no known pathological or symptomatic group, and he suggests the term "short pyrexial attack," or "S.P.A." [Apparently in India, with a view to preventing

wholesale dumping in the "P.U.O." category, this particular title has become hedged around with conditions; but why should not "S.P.A." also suffer in time from the same drawback ?]

D. H.

PHEASE (R. N.). **Report on the Investigation of Short Fevers at Kamptee, Central Province, 1928.**—*Jl. Roy. Army Med. Corps.* 1929. June. Vol. 52. No. 6. pp. 404–418. With 4 charts. [8 refs.]

The observations recorded are the outcome of an investigation carried out at Kamptee in the Central Provinces, India, into the nature, epidemiology and characteristics of an acute specific fever which occurs in epidemic form with marked annual regularity in that station.

This research was one of the special schemes of investigation carried out in India under the aegis, and at the suggestion, of the D.M.S., India, and with funds provided from Headquarters, and made possible by the new pathology organization in India.

The greatest number of cases occurred during June, July and August. A careful record of the meteorological conditions at the station is given and an entomological survey of the area was carried out. As regards symptomatology, there were two types of pyrexia: Type I, a fever of three days duration, and Type II consisting of a primary pyrexial period of two or three days followed after three or four days of apyrexia by a recurrence of fever which lasted for 24 to 36 hours.

Very careful laboratory investigation of selected early cases was carried out, consisting of blood counts, examination of blood films, blood cultures on media suitable for cultivation of leptospira, and animal inoculation, carried out at the bedside. 2 to 3 cc. of blood from 17 cases was injected intraperitoneally into guineapigs; none of the animals showed any signs of disease either during life or when killed and examined. A few rabbits were also inoculated, but without result. All the blood cultures in Fletcher's medium were sterile.

Careful dark-ground examinations of fresh citrated blood were also carried out, but nothing in the nature of a spirochaete or leptospira was seen, except some "pseudo spirochaetes" which could not be stained by Fontana's or Leishman's stain. These bodies were identical with the pseudo-organisms described by KNOWLES.

As a result of his investigations the author is of opinion that two separate and distinct types of fever exist in Kamptee at one and the same time: the simple type of fever being sand fly fever, carried by Phlebotomus, and the more severe and relapsing type carried by Stegomyia. The first type is readily identified with sand fly fever, but the fact that a rash was only rarely seen, renders a definite classification of the second type as dengue, difficult. Yet outbreaks of undoubted dengue have occurred in India when the rash was only seen in about 7 or 8 per cent. of cases. The author therefore considers that dengue and sand fly fever occur together in Kamptee and that the virus cannot be demonstrated either by direct examination or by cultural methods, nor are guineapigs or rabbits susceptible.

Although the results of this investigation from the laboratory point of view were negative, yet they are of value, and great credit is due to the author for carrying out so careful an enquiry in a Central Province station under trying conditions.

D. H.

BABLET (J.). Typhus exanthématique et pseudo-typhus en Indochine. [**Typhus and Pseudo-Typhus in Indo-China.**]—*Ann. de Méd. et de Pharm. Colon.* 1928. Oct.–Nov.–Dec. Vol. 26. No. 4. pp. 409–417. [17 refs.] [Summary appears also in *Bulletin of Hygiene.*]

Typhus is endemic in Tonkin. Sporadic cases may be met with in all seasons, while in the cold season small epidemics may occur, but show little tendency to spread. The clinical symptoms correspond fairly closely to the text book description, though the rash is rarely seen in Annamites. Although the nervous symptoms are pronounced, the disease is fairly mild and the case mortality hardly ever exceeds 10 per cent. The agent of transmission is the louse. It is improbable, and the negative results obtained at the Saigon Pasteur Institute seem to prove this, that the virus of typhus can persist in Southern Indo-China where the climate is constantly hot and damp. The patients seen in Southern Annam by YERSIN and VASSAL had contracted the disease in Tonkin and the epidemic rapidly died out owing to lack of conditions favourable for its development. On the other hand the observations of NOC and GAUTRON at Saigon and of LAGRANGE at Nhatrang show that cases quite distinct from true typhus and resembling Japanese River Fever occur in the southern provinces. No case of this kind has been notified in Tonkin nor has one been seen by the author since January, 1926. The best prophylaxis against typhus consists in carrying out general hygienic measures and individual cleanliness, and in raising the standard of comfort of the less favoured classes of the native population. [See also *Bulletin of Hygiene*, 1927, Vol. 2, p. 455.]

J. D. Rolleston.

FLETCHER (William), LESSLAR (J. E.) & LEWTHWAITE (Raymond). **The Aetiology of the Tsutsugamushi Disease and Tropical Typhus in the Federated Malay States. Part II.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. June 25. Vol. 23. No. 1. pp. 57–70. With 2 charts in text. [16 refs.] [Inst. for Med. Research, Kuala Lumpur, F.M.S.]

The authors are convinced that there are two types of tropical typhus in the Malay States, distinguished from one another by (1) the Weil-Felix reaction, (2) WILSON'S "agglutinabilis" reaction and (3) epidemiology.

In the first form the Weil-Felix reaction is strongly positive with the ordinary indol-producing strains of X19, such as No. 67 and the Warsaw strain, and also the serum of the patients agglutinates Wilson's *B. agglutinabilis*, whereas in the second form the Weil-Felix reaction is negative with these strains but positive with the Kinghorn strain of Proteus, and Wilson's *B. agglutinabilis* is not agglutinated.

Epidemiology.—The urban or W. form of tropical typhus (Brill's disease) occurs in towns and especially among shopkeepers where grain is stored, whereas the K. form is a rural disease and occurs among workers on plantations where secondary growth of weeds has occurred. This latter disease resembles in some ways Megaw's tick typhus and also tsutsugamushi disease.

An outbreak of this K. form, or "scrub-typhus," is described. About 30 cases were admitted to hospital, all coolies employed in

clearing secondary growth. The serum of all cases was tested and was found to agglutinate the K. type of Proteus in high dilution, but none of the sera agglutinated the W. type or Wilson's bacillus. It is interesting to note that the cases of tsutsugamushi disease recently described by the same authors occurred on this same estate and the two diseases are obviously closely related.

These diseases are distinguished, however, by the fact that in scrub-typhus the onset of the fever is sudden and the temperature drops by crisis about the tenth day; whereas in Japanese River fever the onset is gradual and the temperature drops by lysis, the chart resembling one of typhoid fever. They are also distinguished by the fact that a primary ulcer and bubo are found in tsutsugamushi disease, but so far nothing of the kind has been found in scrub-typhus. The authors are of opinion that both scrub typhus and tsutsugamushi are carried by mites.

D. H.

OROYA FEVER AND VERRUGA PERUANA.

NOGUCHI (Hideyo), SHANNON (Raymond C.), TILDEN (Evelyn B.) & TYLER (Joseph R.). **Etiology of Oroya Fever. XIV. The Insect Vectors of Carrion's Disease.**—*Jl. Experim. Med.* 1929. June 1. Vol. 49. No. 6. pp. 993–1008. With 17 figs. on 3 plates (1 coloured). [10 refs.] [Rockefeller Inst. for Med. Research, & Internat. Health Division, Rockefeller Foundation, New York.]

This is a continuation of Prof. Noguchi's work on the etiology of Oroya fever; it was commenced before this death and completed by the other authors.

TOWNSEND, on epidemiological grounds, was of opinion that Oroya fever and verruga were conveyed by Phlebotomi. The authors set out to prove this experimentally. Blood-sucking insects were collected in districts of Peru where verruga is common. These included ticks, mites, midges, lice, fleas, bedbugs, mosquitoes, gnats and horse-flies and were despatched alive in sealed glass tubes kept in the refrigerator on the voyage. The method used was to grind up the insect in saline and inject the emulsion intradermally into monkeys.

The only insects which showed any evidence of the presence of Bartonella were Phlebotomi. Four lots injected into monkeys, although they produced no verruga lesions, yet gave rise to fever in the monkeys and Bartonella was recovered from the blood in cultures. These cultures produced verrugous lesions when injected into other monkeys. Monkeys which had given positive cultures after injection of Phlebotomus emulsion were resistant to injection of other cultures derived from human cases, and monkeys which had reacted to injection of cultures of Bartonella derived from human cases were resistant to cultures of the sand-fly strain.

The authors, therefore, conclude that the insect vector of Oroya fever (Carrion's disease) is a Phlebotomus and that the particular strain concerned is *P. noguchii*, although *P. verrucarum* (Townsend) may also be concerned.

D. Harvey.

BATTISTINI (Telémaco S.). Contribución al estudio de la verruga peruana. II. Cultivo de la *Bartonella bacilliformis.* [**Verruga Peruviana. II. Cultivation of** *Bartonella bacilliformis.*]—*An. Facul. de Med.* Lima. 1927–28. Oct.–Mar. Vol. 10. No. 4-5-6. pp. 243–252. With 1 plate.

The author's technique for cultivating Bartonella is quite simple. A small drop of blood from the finger of the patient is withdrawn by means of a pipette into semi-solid medium (serum-agar, for example), the end is sealed in the flame and the whole placed in an incubator at 28° C. Colonies are visible in 5–6 days. The individual bodies are $0{\cdot}6 \times 0{\cdot}2$ microns to $1{\cdot}6 \times 0{\cdot}5$ microns; they are Gram-negative, markedly motile at the junction of medium and water of condensation, but flagella have not been demonstrated. In old cultures spirillar forms are seen, from 7–30 microns in length. Growth will not take place in fluid media, only on solid or semi-solid, and under aerobiosis. Cultures had no action on any of 17 sugars tested. The reaction of the medium may be between pH 6·8 and 8·2, but the optimum is 7·4–7·6. A temperature of 56° C. destroys the organisms in 10 minutes, of 60° C. in 5 minutes; 1 per cent. formol, tricresol, or lysol in 10 minutes.

Whether in culture or blood they will not pass through Berkefeld filters V or N. In citrated blood they remain viable at 14° and 26° C. for 3 and 1 month respectively; in culture at laboratory temperature (22°–25° C.) they survive for 60 days, even though no precaution is taken to prevent the medium drying.

H. Harold Scott.

YAWS AND SYPHILIS.

FIERA (Ernesto Ruberti). La framboesia in Somalia. [**Yaws in Somalia.**]—*Ann. di Med. Nav. e Colon.* 1928. Nov.–Dec. Year 34. Vol. 2. No. 5–6. pp. 321–332. With 12 figs. on 4 plates. [8 refs.]

A rather disjointed account of yaws as met with in Italian Somaliland and as described in various text books. Until recently yaws had not been differentiated from syphilis, but it is now found to be widely disseminated in that country and presents the regular clinical picture of this affection. Cases of gangosa are met with, but no case of goundou was seen. Juxta-articular nodules are not referred to. In a few cases lesions were noted on the mucous membrane of the mouth and pharynx. Arsenobenzol is the remedy preferred, 30, 45, 60, 60, 60, 60 cgm. given at weekly intervals intravenously, followed by a month on potassium iodide. For nurslings the treatment was given to the mother, through whose milk the infant derived the drug.

H. S. Stannus.

MONTEL (L. R.). Le chancre pianique. "Lésion primaire d'inoculation." [**The Yaws Chancre.**]—*Bull. Soc. Path. Exot.* 1928. Nov. 14. Vol. 21. No. 9. pp. 785–790. With plates 3–9. [Polyclinic, Saigon.]

A discussion upon the question whether there is such a thing as a primary chancre or lesion of inoculation in yaws and if so whether its characters have been truly recognized. The author points out how unconvincing are many of the descriptions given by many writers and finds little help in answering these questions from a study of the inoculation lesions obtained by SCHÖBL in monkeys. While in Cochin China the author had the good fortune to see a number (56) of early cases of yaws and from his observations he answers both his questions in the affirmative and gives a series of photographs illustrating his points. He describes what he considers to be the normal evolution of the primary lesion and contrasts this with that of the primary chancre in syphilis, concluding with the following table :—

Syphilitic chancre.	Framboesial chancre.
Non-vegetating ulcer.	Vegetating lesion.
Induration.	No induration.
Never more than 1 cm. in diameter.	Always more than 1 cm. in diameter up to 5 cm.
Situated almost always on genitals.	Generally situated on lower limbs.
Not inflammatory in character.	Inflammatory in character.
No pruritus.	Pruritus present always.
Tendency to spontaneous cure.	No tendency to spontaneous cure but rather to chronic ulceration.
Not modified by the occurrence of secondary lesions.	Modified by the occurrence of secondary lesions.
Cicatrix not apparent.	Cicatrix persists.

[Those interested in this subject will read the paper ; they will find possibly statements upon which opinions are not unanimous.]

H. S. S.

VON BÜLOW (T.). Le contrôle du pian au Costa-Rica. [**Control of Yaws in Costa Rica.**]—*Bull. Soc. Path. Exot.* 1928. Oct. 10. Vol. 21. No. 8. pp. 667–676. [2 refs.]

In 1924 some few cases about which Dr. FALLAS had some suspicions were diagnosed by the author as yaws, this being the first time yaws was recognized in Costa Rica. Since then evidence has accumulated to show that the disease is widespread in the canton of Osa to the south. Here the inhabitants consist of an aboriginal Indian population, ignorant, superstitious and living under poor conditions. An incidence of from 6 to 16 per cent. was found in the various provinces. Primary lesions occurred on the lower limb in 87 per cent., on the upper limb in 12 per cent. In one case the incubation period is stated to have been three years, that is between the date of last contact with possible yaws and the appearance of the initial lesion. The author believes that a tick, *Amblyomma cayennense*, plays an important part in transmitting the disease and thinks the virus may remain in the tick for many months. This suggestion is apparently based on the observation of a case of yaws which, having been duly treated, six months later, without so far as is known, having come in contact with a case, developed a florid secondary eruption. As he says, never does one see a recrudescence of the disease in cases properly treated. [There will be little doubt in the minds of readers that it was a recrudescence despite the treatment which was presumably that given as routine, viz., a total of 3·15 gm. N.A.B.] Eighteen per cent. of cases seen were in the primary stage. Thirty-four per cent. showed secondary eruption, the remainder being classed as tertiary lesion cases including plantar lesions 36 per cent. and bone pain 18 per cent. A single case of J.A.N. was observed among the total of 250 cases.

The author gives a share in the spread of the disease to the plant *Sida rhombifolia* (N.O. Malvaceae) which abounds in the fields and about the paths. In the dry season the leaves fall and the sharp branches wound the feet and legs of each passer-by. The primary yaws lesions are found invariably on the outer side of the lower limbs. It follows that an important part of prophylaxis is to destroy the plant as far as possible and to keep the tracks clean.

H. S. S.

i. FRANKLIN (E. Morris). **Analysis of 4,473 Cases of Yaws.**—*Gold Coast Rep. Med. & San. Dept. for Year ended Apr., 1926-Mar., 1927.* Appendix B. pp. 124–125.

ii. BOASE (A. J.). **Report on the Use of the Bismuth Salts in the Treatment of Yaws and Syphilis.**—*Uganda Protectorate Ann. Med. & San. Rep. for Year ended 31st December, 1927.* Appendix No. IV. pp. 78–81.

iii. ACHESON (J. A.). **A Note on 2,279 Consecutive Cases of Yaws treated in the Kasempa District of Northern Rhodesia, 1925 and 1926.**—*Northern Rhodesia Med. Rep. on Health & San. Conditions for Years 1925 & 1926.* Appendix pp. 125–142. With 12 figs. on 6 plates.

i. Conclusions reached are to the effect that bismuth sodium potassium tartrate is a cheap, efficacious, easily administered remedy for yaws in 1½ grain doses for adults with a total of 14 grains, given deep subcutaneously. Intramuscular injections are too painful and larger

dosage gives rise to stomatitis. It is non-effective in certain cases in which N.A.B. is useful and is not very efficacious in late yaws.

ii. In Uganda for yaws and syphilis the preparation above mentioned is preferred to bis. sod. tart., but it is used intramuscularly [the deep subcutaneous method not apparently being known] and is in consequence objected to by the natives. The length of treatment necessary to effect cure in yaws is unknown. N.A.B. is preferred for the initial injection to clear up a primary sore of syphilis.

iii. From observations made in the Kasempa district, which lies to the extreme north-west of Northern Rhodesia, 25 per cent. of the total population of 53,000 is estimated to have yaws. The disease is considered to have been endemic for generations. 2,279 cases were treated. At the same time 13 cases of syphilis were seen and so recognized by the sick themselves; infection was obtained elsewhere. The incidence of gangosa has convinced the author that it is of framboetic origin. The author states that "contrary to the almost universal contention that the secondary granulomata do not or only exceedingly rarely affect mucous membranes, a number of cases were found with the mucous membrane of the lips involved." [It is possible that these in reality did start on the skin and spread to the mucous membrane, as later the author says he has seen this happen, though "in 11 cases, 3 adults and 8 children, lesions completely on the mucous membrane of the lip" were noted. In 22 cases the nostrils were blocked but the lesions sprang from the muco-cutaneous junction; lesions were common on labia but never seen on vaginal mucous membrane.] Skeletal pains were commonly complained of but glandular swelling was not seen unless associated with secondary infections. The excellent clinical descriptions given vary little from those of other observers. The "pitting of the soles and palms" and "worm-eaten appearance" was noted in some cases with secondary eruptions, though more commonly seen later. Patchy leucoderma was also noted. J.A.N. were met with but rarely and only a single case of goundou. Satisfactory results were obtained with treatment by three intragluteal injections—4 grains each, of sod. pot. bis. tart. in 20 minims of water at 5-day intervals. Long-standing lesions require longer courses of treatment.

H. S. S.

BARLOVATZ (A.). Sur le traitement du pian. [**Treatment of Yaws.**]—*Bull. Soc. Path. Exot.* 1928. Nov. 14. Vol. 21. No. 9. pp. 743–747.

A record of results obtained in the treatment of yaws using different drugs in an attempt to find the optimum dosage and the minimal total amount of drug necessary *to clear up the eruption.* In short, the results were as follows:—

	Total Dosage cgm. per kg.	Adult Dose.	No. of Cases.	Successes.
Stovarsol ...	6–10	3·6 to 6 gm.	14	8
Narsénol ...	2–4	1·2 to 2·4 gm.	8	0
Novarsenobenzol	1–1·5	0·6 to 0·9 gm.	12	10
Acetylarsan (sol.)	8–10	4·8 to 6 cc.	12	8
Bi 36 salt ...	0·2–0·4	0·12 to 0·24 gm.	90	56
Biquinyl salt ...	0·8–1	0·48 to 0·6 gm.	6	5

[These results may, however, be of comparatively little value, as what should be aimed at is *cure*, a point brought out in the discussion on this paper by MONTEL.]

H. S. S.

SOLLINI (A.). Il pian e il neo I.C.I. [**"Neo I.C.I." in Yaws.**]—*Arch. Ital. Sci. Med. Colon.* 1927. July. Vol. 8. No. 7. pp. 396–399.

The efficacy of "neo I.C.I." in the treatment of syphilis suggested to the author a trial of this compound in cases of yaws under his care in the Belgian Congo. The amount of the drug at his disposal being limited, only some ten cases were treated. In children, beginning with doses of 0·15 gm., subsequent injections of 0·3, 0·35, 0·45 up to 0·6 were given on alternate days either intramuscularly or intravenously according to age and until lesions cleared up. Complete healing of secondary lesions was often obtained after the second or third injection. Clinical cure is rapidly effected, toxicity is small, the solution is stable.

H. S. S.

VAN NITSEN (R.). Le traitement et la prophylaxie du pian au Congo belge. [**Treatment and Prevention of Yaws in Belgian Congo.**]—*Bruxelles-Méd.* 1929. May 26. Vol. 9. No. 30. pp. 861–865. [26 refs.]

After referring in brief to the high incidence of yaws among the natives of the Belgian Congo, from 40 to 100 per cent. in many provinces, the author passes in review the many substances which have been advocated in the treatment of the disease. Salvarsan and its homologues, including sulpharsenol, he considers by far the most efficacious remedy provided the total dose is sufficient—up to 5 grams. Stovarsol is most useful for children. Bismuth salts have lost favour in many hands owing to the accidents which may follow their exhibition; still they are of great value. Mercury finds no place in the treatment of yaws. Tartar emetic is slow and uncertain. Potassium iodide proves of value in tertiary cases. The necessity for well-planned anti-yaws campaigns is then pointed out and allusion made to the rather disappointing results obtained in some British colonies.

H. S. S.

HEINEMANN (H.). Bericht ueber 2 Fälle salvarsan-resistenter Framboesie. (Mit einigen Bemerkungen zur Pathologie der Framboesie.) [**Two Cases of Salvarsan-Resistant Yaws.**]—*Arch. f. Dermat. u. Syph.* 1928. Nov. 9. Vol. 156. No. 3. pp. 577–582. With 2 text figs. [4 refs.]

The spectacular results obtained in perhaps the majority of cases of yaws treated with salvarsan preparations has in the past rather tended to confuse the real problem as to the dosage and length of treatment necessary to cure cases of yaws. Many observers have found considerable variation in the reaction of these cases to arsenicals, and Dr. Heinemann now records two cases in Javanese which were salvarsan-resistant. The first, a boy aged 7 years, received two injections of 0·2 gm. neosalvarsan, followed by four further injections, without

improvement. He was then taken into hospital; after eight injections the lesions were active; treponemata were still present and the W.R.+++. The second case was a woman who, after five injections of 0·45 gm. neosalvarsan, showed persisting active lesions. She also was taken into hospital and after the sixth injection still failed to respond.

The author refers to the experience of BAERMANN and quotes the figures of that observer given below in a table which shows the percentage of cases in various groups giving a positive W.R. after 1–3 treatments.

	Primary lesions.	Secondary lesions.	Hand and foot lesions.	Keratosis of palms and soles.	Tertiary lesions.
After one treatment ...	52	47	47	44	63
After two treatments ...	42	40	43	45	54
After three treatments ...	29	34	36	35	48

The second point of interest which the author deals with is the evidence for framboesial affections of the nervous system. Among 270 cases of yaws in all stages the W.R. reaction in the cerebrospinal fluid was negative in all. In a single case there was a pleocytosis and in a single case the gold sol reaction was positive. These cases may have been syphilitics. A case of paraplegia with positive blood W.R., in whom there was no history of syphilis but probably of yaws, with a C.S.F. negative to all tests, was considered to be due to syphilis. Another case of right hemiplegia and aphasia in an old yaws case showed a negative blood W.R. becoming positive under treatment with mercury and iodide, but a negative C.S.F. This case would have been considered a typical syphilitic case in Europe, but there was no history of syphilis, and the author suggests that such cases need considering as possibly due to yaws.

H. S. S.

TANABE (B.). **The Effect of the Administration of Alcohol upon the Result of the Wassermann Test in Yaws Monkeys.**—*Philippine Jl. Sci.* 1928. Nov. Vol. 37. No. 3. pp. 247–250. [3 refs.]

The fact that the recent ingestion of alcohol may interfere with the result of a Wassermann reaction in human syphilis was demonstrated by CRAIG and NICHOLS in 1911 and subsequently confirmed by other observers.

The author, working on Philippine monkeys experimentally infected with yaws, now shows that a similar phenomenon occurs. The ingestion of 20 cc. of 48 per cent. alcohol by mouth or the parenteral administration of 3 cc. of 95 per cent. alcohol has caused the blood serum, which gave a double plus W.R. before the alcohol, to yield a negative W.R. 24–48 hours after the alcohol. After a further 72 hours this artificially induced negative reaction again became plus.

H. S. S.

DA SILVA (Francisco Venancio). O pian. [**Yaws.**]—*Bol. da Assist. Méd. aos Indigenas.* Loanda. 1929. Jan. Vol. 3. No. 1. pp. 1–7. With 7 figs. on 4 plates.

Some notes on cases of yaws as seen in the Congo with correspondence about the use of salicylate of bismuth in treatment. Among other things the author holds that yaws may be an inherited disease without saying how hereditary syphilis is differentiated. The photographs are quite undecipherable.

H. S. S.

LISSNER (L.). **The Successful Treatment of Yaws with Intramuscular and Subcutaneous Injections of Myosalvarsan at the Hospital of the San Carlos Milling Company, San Carlos, Occidental Negros.**—*Jl. Philippine Islands Med. Assoc.* 1928. Aug. Vol. 8. No. 8. pp. 372–374. With 2 figs.

The author reports results of treatment in 33 cases of yaws at all stages which he considers are as good as those obtained with N.A.B. without the drawback connected with intravenous injection. No details mentioned.

H. S. S.

VENERONI (Carlo). Contributo allo studio delle nodosità iuxta-articolari. [**Juxta Articular Nodules.**]—*Arch. Ital. Sci. Med. Colon.* 1928. Aug. Vol. 9. No. 8. pp. 481–483. [" Principessa Maria " Colonial Hosp., Chisimaio, Italian Somaliland.]

The author has noted cases of J.A.N. in Somaliland but they are not very common. After referring to the observations of some well-known authors he considers that his own cases suggest a treponemal etiology, though none of them showed manifestations of syphilis.

H. S. S.

JEANSELME, BURNIER & ELIASCHEFF. Considérations sur un cas de nodosité juxta-articulaire survenu chez un syphilitique. [**Case of J.A.N. in a Syphilitic.**]—*Bull. Soc. Française Dermat. et Syph.* 1928. June. No. 6. pp. 450–455. With 3 figs. [1 ref.]

A typical case of a single J.A.N. occurring on the ulnar crest just below the olecranon in a man aged 34 years. No history of infection with syphilis (nor of yaws), but the W.R. was positive and there was a history of losses of consciousness during the war (1917) which ceased on anti-syphilitic treatment, and of acute articular rheumatism in 1919, possibly of syphilitic nature. Sections made from the nodule removed by operation showed the characteristic changes of the lesion. This case is therefore considered to be a case of J.A.N. of syphilitic origin [one more to add to the short list of such known cases which have been discussed in this *Bulletin.*]

SHARPE (W. Salisbury). **Notes on a Case apparently Identical with " Goundou " occurring in London.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Nov. 25. Vol. 22. No. 3. pp. 293–294. With 5 figs. on 2 plates.

A most interesting case originally under the care of Mr. E. D. D. DAVIS, and shown by him at the Annual Congress of Laryngology and Otology in June. The case was recognized, however, by Dr. Salisbury Sharpe as a condition apparently identical with goundou and was shown by him at the Royal Society of Medicine. A male aged 43, always resident in London,

with a history of syphilis (date not mentioned) and a positive W.R. The paranasal swellings are certainly characteristic of goundou [the case was seen by the reviewer at the Royal Society of Medicine] and they are associated with a sclerosing osteitis of the right mandible [resembling very much some of the cases described by BOTREAU-ROUSSELL]. This is possibly the first case to be described in a white and the first such case having the clinical characters of goundou to be definitely ascribable to syphilis, though the author refers to a case noted by CASTELLANI and CHALMERS as recorded by CANTLIE in a European—a unilateral case.

H. S. S.

BALFOUR (Andrew). **A Condition resembling Goundou in a Pony.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1928. Nov. 25. Vol. 22. No. 3. p. 295. With 1 text fig.

A note, with a photograph, upon a circus pony about the size of a retriever dog, "encountered as a fellow passenger on a steamer proceeding from Mauritius to Bombay." The previous history of the pony is unknown, but it presented a swelling on either side of the nasal bones hard to touch, but which did not appear to incommode the animal in any way. The general appearance and character of these paranasal swellings suggest a condition analogous to goundou, such as been described as occurring in apes and monkeys.

H. S. S.

SECQUES (François). Un cas diagnostiqué "goundou" chez le gorille. [**Goundou diagnosed in the Gorilla.**]—*Rev. Méd. et Hyg. Trop.* 1929. Mar.–Apr. Vol. 21. No. 2. pp. 50–53. With 2 text figs. [9 refs.]

The description of a male gorilla skull from Oubangui-Chari showing partly symmetrical bony hypertrophy resembling others which have been described and are referred to by the author. The salient features of the case are two masses of hard spongy bone approximately symmetrical situated on the malar portion of the superior maxillae resembling somewhat the tumour seen in goundou. A third osseous mass is present about the right occipital crest in front of the mastoid. Besides these tumours, it is noted that there are thickenings of the bone about the orbital margin and the horizontal rami of the mandible.

H. S. S.

HERMANS (E. H.). **The Course of Syphilis in the Native.**—*Acta Leidensia* (*Scholae Med. Tropicae*). 1927. Vol. 2. pp. 96–110. [21 refs.] [Summary appears also in *Bulletin of Hygiene.*]

In the Dutch Indies, according to Hermans, primary and secondary syphilis are very rarely seen. This, he thinks, is not because the native does not seek medical advice, since natives in districts well supplied with medical assistance seek advice for quite trivial lesions. In natives who develop a primary sore the secondary manifestations, unless stopped by treatment, affect the skin and mucous membranes, glands and joints extensively and severely. Tertiary syphilis is the form commonly seen, and KUYER has remarked respecting Soemba that the opinion is gradually gaining ground that what is diagnosed as tertiary syphilis may be tertiary yaws. Hermans thinks that extra-genital infection of children may possibly explain the lateness of the lesions seen in adults. Congenital syphilis is very uncommon in the Preanger, where, according to MULDER, 30 per cent. of the

population are syphilitic, Hermans saw only two cases of congenital syphilis in three years, and three other workers found none in 600 patients suffering from V.D. Neurosyphilis is very uncommon, but the author considers it is far more common in native soldiers who submit to modern treatment. The remainder of his paper is an argument to the effect that salvarsan and mercury, especially the former, administered in the earlier stages, so preventing a full inter-action between somatic tissues and virus, predisposes to tabes and G.P.I. Consequently he favours a more or less *laissez faire* policy in the early stages. [The author seems to ignore the fact that in the history of large numbers of cases of tabes and G.P.I. there is practically nothing of treatment, and in great numbers more the treatment has been by mercury administered orally for a few weeks or months. He bases his views on the fact that in the few cases he has seen the treatment has been more strenuous and with salvarsan and mercury. He seems to ignore the social conditions under which the cases had lived. These, judging by the accounts, approached those of European civilization more closely than did those of natives not in Government service.]

L. W. Harrison.

FERRUCCIO (Cotta-Ramusine). La sifilide cutanea in Somalia. [**Cutaneous Syphilis in Somalia.**]—*Arch. Ital. Sci. Med. Colon.* 1928. Dec. Vol. 9. No. 12. pp. 735–742. With 3 text figs.

Referring to the heavy incidence of syphilis among many native races the author believes it to be the chief factor in their destruction. Dealing with the congenital disease he points out that symptoms may be delayed until maturity when tertiary lesions appear in attenuated form affecting skin, mucous membrane or bone or, later, the viscera. Naso-pharyngeal ulceration with destruction is common, as are also similar destructive lesions of the vault of the skull. Syphilitic hepatitis is probably not uncommon, and more rarely cardio-vascular lesions, lesions of the lung and genito-urinary tract, but tabes, general paralysis and transverse myelitis are practically unknown.

The acquired disease presents a clinical picture resembling that seen among whites, but the primary and secondary lesions are not often seen owing to the native's indifference. Rupia and ulcerative skin lesions at the end of the secondary period, however, are more commonly seen, sometimes with high fever and more rarely with affection of liver, spleen and bowel. The differential diagnosis is often difficult from yaws, " tropical," and other forms of ulcer.

H. S. S.

ARAUJO (Oscar da Silva). Alguns commentarios sobre a syphilis no Rio de Janeiro. [**Syphilis in Rio de Janeiro.**]—92 pp. With 34 figs. on 14 plates. 1928. Rio de Janeiro: Empreza Graphica Editora—Paulo, Pongetti & Cia. Avenida Mem de Sá, 67–78.

In the first half of this brochure Dr. Araujo surveys firstly the evidence for and against the presence of syphilis in South America before the Columbian epoch, and sums up in favour of the view that the disease was introduced from Europe by the early pioneers who crossed to the southern continent subsequent to the discovery of America. He then traverses the literature in regard to descriptions of the disease by early writers in Brazil, and the

causes which made for its spread in Rio, a city whose population started with a nucleus of traitors and others banished from their own countries, the dregs of Brazil, to which were added some cargo-loads of undesirable women; indeed, at that time the country harboured and gave guaranteed shelter to all the criminals who found their way there except those accused of "heresy, treason, sodomy and forgery."

In the second half of his work the author deals with the clinical disease as now encountered. Analysing his cases of primary genital chancre, the site was as follows: balano-prepucial sulcus 190; outer surface of prepuce 185; inner surface of prepuce 125; frenum 157; glans 73; meatus 22; scrotum 4; intra-urethral 2. Extra-genital chancres have been said to be very common. In Rio they formed in a year (1916) 9–10 per cent. and are more frequently seen in whites than coloured people. The differential diagnosis of the extra-genital chancre from leishmaniasis is not always easy; the points in favour of chancre being a single lesion with regional gland involvement, together with of course a positive W.R. and reaction to anti-syphilitic remedies. Primary lesions were seen at all ages from 9 to 70 years, but the majority occur in males between the ages of 17 and 30, with highest incidence between 20 and 25 years. Clinically, with the exception of some minor points, syphilis in Rio resembles the disease as seen in colder climates. The incubation period would appear to be shorter, in many cases only 8–10 days. A roseola is not often distinguished, but papulo-lenticular and squamous eruptions are common. Pustular and acneiform lesions are relatively rare, compared with the incidence in other hot countries. Mucous plaques about the lips are uncommon, but condylomata about the anus and in the axilla very frequent. Alopecia is rarely seen and the same is true of onychia and perionychia. Bone and joint pains are often complained of, perhaps not more frequently than in other countries, but probably earlier in the disease. Tertiary skin and bone lesions are uncommon in Rio at the present time owing to treatment having been instituted, but such lesions are seen in those coming into the city from outlying areas. Tabes and G.P.I. would appear to be not much less common in Rio than in European cities, but these diseases do not occur in native races in distant provinces. Infection from white or coloured women appeared not to be a decisive factor in determining onset of these diseases. Other types of neurosyphilis are common. More remarkable, however, is the widespread and early incidence of cardio-vascular disease in syphilitic infection. Signs of a generalized affection of the vascular system is often seen within a few weeks and within a year aortitis and myocarditis. Among the coloured people syphilis is said to be characterized by annular, framboesiform, keloid eruptions and juxta-articular nodules. Some 100 cases of the latter condition were met with of undoubted syphilitic origin. A series of photographs illustrate very well many of the conditions described, including the eruptions, sabre tibiae, the condition known as gangosa, J.A.N. (here reproduced), etc.

H. S. S.

Cook (Albert R.). **The Treatment of Ante-Natal Syphilis.**—*Kenya & East African Med. Jl.* 1929. Apr. Vol. 6. No. 1. pp. 12–18.

In a paper given in Uganda Dr. Cook advances a strong plea in favour of the use of mercury in the treatment of *latent* syphilis in pregnant native women in Uganda. The stock mixture contains 1/48 grain hydrarg. perchlor. per dose, taken thrice daily. It is claimed that it is effective, cheap, readily taken by natives and without injurious effects; women who have before had many miscarriages, for the first time bear healthy children. [No statistics given.] Dr. Cook says "there is no doubt that between 1897 and 1907 . . . the incidence of

syphilis increased rapidly. In 1921 . . . on purely clinical grounds . . . we came to the conclusion that 80 per cent. of these people had at one time or another suffered from syphilis . . . about 21 per cent. show signs of active syphilis . . . untreated cases suffer from an appalling number of abortions and produce a large number of children suffering from congenital syphilis . . . The ante-natal mortality . . . is 67 per cent. in pregnant women suffering from syphilis. The deaths under 12 months old in Uganda amount to 330 per 1,000. Treatment in hospital and by trained native midwives at country centres has actually reduced this high mortality by three-quarters." [These are figures up to 1922, but it is not clear that only syphilis is being dealt with as a cause of ante-natal and infant mortality.] Among five to six-hundred confinements treated at the Lady Coryndon Maternity Training School annually the syphilis rate was: 1925, 62 per cent.; 1926, 60 per cent.; 1927, 67 per cent.; 1928, 62 per cent.; "not a very great reduction in the figures seven years ago" considering the large amount of anti-venereal work carried on in Uganda. [No figures as to the results of treatment of these cases are given, but one has to be satisfied with such generalizations as "The birth rate per 1,000 has steadily risen from 24–29, during the last seven years, and the percentage of still-births to total births sunk from 12·21 to 11·63" (Government Annual Report, 1927). Perhaps Dr. Cook will publish in this country carefully prepared statistical evidence later on, as the matter is important.]

H. S. S.

WILLIAMS (L. H.). **Antimony and Potassium Tartrate in Treponematosis.**—*U.S. Nav. Med. Bull.* 1929. Apr. Vol. 27. No. 2. pp. 386–388. [1 ref.]

A short note upon the history of the anti-treponematosis campaign in Haiti undertaken by the U.S. Naval Medical Corps. With 80 per cent. of a population of 2,000,000 inhabitants suffering from some stage of infection the problem was a big one. It was not until after the War that it became possible to tackle the question. Up till 1925 mercury, potassium iodide and salvarsan compounds had been used; since then the cheaper antimony sodium potassium tartrate has been substituted. Now, together with this compound given by injection, a mixture containing pot. iod. and perchloride is given by mouth as routine. [The Americans find it impossble to distinguish between yaws and syphilis and only speak of "treponematosis," and no mention is made of mercury as a therapeutic test between the two.] The author then refers to some 200 cases suffering from old standing ulcerative lesions, resistant to treatment by mercury, iodide, salvarsan and bismosol and unimproved by all kinds of local treatment. For this condition he tried treatment with bi-weekly intravenous injections of 3–10 cc. 1 per cent. solution of tartar emetic, and believes that this procedure has proved an advance. Among the 200 cases, however, only 20 per cent. showed improvement; others gave no response at all and many controls did just as well merely treated by local applications of salt solution. It is noted that though many showed signs of old yaws, the Kahn test was often negative.

H. S. S.

COHEN (A. J.). Aandoeningen van het Centrale Zenuwstelsel op Java. [**Affections of the Central Nervous System in Java.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1929. Mar. 15. Vol. 69. No. 3. pp. 229–242.

Affections of the central nervous system are fairly common among Javanese. This article practically only deals with the syphilitic affections, to which group belong 77·4 per cent. of 62 cases of disease of the central nervous system seen by the author, whilst syphilis of other internal organs is quite uncommon in tropical races. Civilization and alcohol do not account for the preference syphilis appears to have for nervous tissues; arsphenamine treatment, may, however, play some part.

Hemiplegia in young Javanese is practically always of syphilitic origin; as regards recovery the prognosis is unfavourable. The chances of recovery are somewhat better (though quite uncertain) in other syphilitic affections of the central nervous system. Sometimes even after a duration of several years specific treatment may bring improvement of the condition. Anyhow, in case of doubt as to the etiology of an affection of the nervous system, a carefully administered anti-syphilitic cure may be recommended. W. J. Bais.

GIRARD (G.) & ROBIC (J.). La réaction d'opacification de Meinicke (technique de Mutermilch). Son application au séro-diagnostic de la syphilis dans la pratique coloniale. [**The Use of Meinicke's Reaction in Syphilis in Colonial Practice.**]—*Ann. de Méd. et de Pharm. Colon.* 1928. Apr.–May–June. Vol. 26. No. 2. pp. 178–187. [2 refs.]

The Meinicke turbidity reaction was tried on 242 serums in Madagascar, and compared with results of the Hecht (Pasteur Institute) test and the complement fixation test (Calmette and Massol) on the same serums; with critical consideration of the clinical data of the cases from which the serums were obtained.

As a result the C.F.T. (Calmette and Massol) appeared the most reliable and the Meinicke certainly not one that could be substituted for it. H. M. H.

FREI (Wilhelm) & KOPPEL (Alice). Ulcus vulvae chronicum elephantiasticum (esthiomène) und sogenanntes Syphilôme anorectal als Folgeerscheinungen der Lymphogranulomatosis inguinalis. [**Vulval and Anorectal Complications of Lymphogranuloma Inguinale.**]—*Klin. Woch.* 1928. Dec. 2. Vol. 7. No. 49. pp. 2331–2336. [43 refs.] [Skin Clinic, Univ., & "Allerheiligen" Hosp., Breslau.]

Five cases are described of the condition which has been called chronic ulceration of the vulva with elephantiasis and so-called syphiloma of the ano-rectal region. There were four women and one man. The preponderance of women over men was noted by FOURNIER, who gave the proportion as eight to one. The cases described were all pretty typical of the condition, but their interest lies in the fact that the authors were able to show, by using the recently discovered skin reactions in lymphogranuloma inguinale and ulcus molle, that the former is almost certainly a factor in the etiology of the condition under review. All

five cases gave a positive L.I. reaction, and all showed evidence of previous inguinal lymphadenitis. On the other hand, as tested by Ducrey's antigen, ulcus molle bubo appears to play an unimportant rôle contrary to previously expressed opinion. Whether syphilis also is a factor is uncertain, though the co-existance of venereal infection is common. Tuberculosis plays no part.

H. S. S.

ALBUQUERQUE (M. J. Cavalcanti). Aspectos regionães e prophylaxia das doenças transmissiveis devidas a espirochetas. A bouba na Parahyba. —*Archivos de Hyg.* Rio de Janeiro. 1928. May. Vol. 2. No. 1. pp. 65–75. English summary facing p. 76.

BOASE (A. J.). Report on the Use of the Bismuth Salts in the Treatment of Yaws and Syphilis.—*Kenya & East African Med. Jl.* 1929. Mar. Vol. 5. No. 12. pp. 400–405.

WEIR (H. C.). A Note on the Value of "Sobita" in the Treatment of Yaws.—*West African Med. Jl.* Lagos. 1929. Apr. Vol. 2. No. 4. pp. 185–186.

CLIMATIC BUBO.

i. NICOLAS, FAVRE & LEBEUF. Lymphogranulomatose inguinale opérée : présence de ganglions iliaques suppurés, macroscopiquement semblables aux ganglions inguinaux. [**Granuloma Inguinale with Large Iliac Glands.**]—*Bull. Soc. Française Dermat. et Syph.* 1929. Apr. No. 4. pp. 287–288 (R.L. pp. 243–244).

ii. GATÉ (J.) & MICHEL (P.). Un cas de maladie de Nicolas-Favre bilatérale, avec très grosses adénopathies iliaques et accident primitif ulcéreux atypique.—*Ibid.* pp. 289–291 (R.L. pp. 245–247).

i. Report of a case of climatic bubo exhibiting typical left inguinal adenopathy without fistulation associated with masses of enlarged iliac glands on each side. The inguinal mass was removed by operation, as also two glands from the left iliac region per the inguinal canal. Both sets of glands on section were typical and showed softening and abscess formation. The interest in this communication lies in the fact that it is shown that changes in the iliac glands may resemble those in the inguinal groups, that spontaneous disappearance of the remaining iliac glands may take place, confirming the observation of Nicolas and Favre that such disappearance does take place after removal of the affected inguinal glands. [It would seem fair to argue from this observation, inasmuch as it has not been shown that the iliac masses persist if the inguinal glands are not removed, that operative interference should be unnecessary for the inguinal masses, and would further favour HANSCHELL's method of treatment.]

ii. Report on a second case with double inguinal adenopathy with fistulae and enlargement of iliac groups.

H. S. Stannus.

KITCHEVATZ (Milan). Un cas de réinfection ou superinfection probable de la maladie de Nicolas-Favre. [**A Case of Climatic Bubo with Probable Reinfection or Superinfection.**]—*Bull. Soc. Française Dermat. et Syph.* 1929. Mar. No. 3. pp. 173–178. With 1 text fig. [Dermo-Syph. Clinic, Faculty of Med., Belgrade.]

The author relates in detail the case of a 26-year old male who, in August 1926, suffered from a left inguinal adenopathy having the characteristics of climatic bubo but unassociated with any genital lesion. Treatment by

incision was followed ultimately by complete healing at the end of ten months (i.e., June 1927), but there persisted a thickening in the scar the size of a filbert nut. In August 1928 the patient presented himself with a double inguinal adenitis preceded by two small superficial lesions on the prepuce, and later accompanied by marked general symptoms. Specific intradermal reactions for climatic bubo were strongly positive, for soft sore mildly positive, due doubtless to a previous infection. There was no evidence of syphilis or gonorrhoea.

The author in discussing the case thinks that the more rapid evolution of the second attack, the marked general symptoms and the very marked cuti-reaction point to either a superinfection or a reinfection in a person who has been sensitized by the previous attack.

H. S. S.

NICOLAS (J.), LEBEUF (F.) & ROUSSET (J.). A propos de l'inoculabilité expérimentale de la maladie de Nicolas-Favre : le pseudo-chancre d'inoculation. [**Experimental Inoculability of Climatic Bubo.**]—*Bull. Soc. Française Dermat. et Syph.* 1929. Apr. No. 4. pp. 320–322 (R.L. pp. 276–278). [1 ref.]

These observers having repeated the experiments of J. A. G. PRIETO carried out in Madrid find that the lesion produced by inoculation of a guineapig with a portion of gland tissue from a case of climatic bubo is not in truth of the nature of a lymphogranuloma but merely an " abscess of elimination," and that the accompanying glandular enlargement is in no way histologically akin to that disease and that, in fact, similar results may be obtained by inoculating control animals with any kind of tissue. This disease is so far non-inoculable into animals.

H. S. S.

FISCHL (Friedrich). Lymphogranulomatosis inguinalis. (Poradenitis.) [**Lymphogranuloma Inguinale.**]—*Seuchenbekämpfung.* Vienna. 1929. Vol. 6. No. 2. pp. 104–110. [4 refs.]

A general résumé of our knowledge upon this condition which, originally described from the tropics, is being recognized all over the world.

Donovan bodies were not discovered, but the lesions often showed " a contaminating spirochaete " which disappeared after a few tartar emetic injections. [No mention is made of the fusiform bacillus. It seems possible that the good results obtained in the 20 per cent. of cases were due to the effect of the emetic on a condition allied to the ordinary tropical ulcer rather than on a lesion due to yaws or syphilis (treponematosis).]

H. S. S.

GRANULOMA VENEREUM.

KALTHOFEN (A.). De bestrijding van het Venerisch Granuloom onder de Kaja-Kaja's van Nederlandsch-Zuid-Nieuw Guinea. [**The Combating of Granuloma Venereum among the Kaja-Kajas of Dutch South New Guinea.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1928. Vol. 68. No. 5. pp. 740–752. With 1 sketch map & 9 figs. on 4 plates. [11 refs.]

The Kaja-Kajas are the aboriginal Papuans of South New Guinea. Their primitive habits (clan system, low level of family life, lack of respect for the female, separation of the sexes and the housing of the

boys in dormitories) have led to sexual and homosexual extravagances unknown elsewhere. The Kaja-Kaja population therefore constituted a very fertile soil for any venereal disease imported. The author thinks that granuloma venereum must have been fairly recently introduced, and cannot believe that it has existed for a long time in sporadic form. He rejects with indignation the opinion that the European should be held responsible for the epidemic which has raged since about 1915. He holds that Papuan native dancers from British New Guinea transmitted the disease, after the Dutch government had established order and peace among the Kaja-Kaja tribes.

A short clinical description of the disease is given with good illustrations and the geographical distribution is recorded. The combating of the epidemic is carried out in a few (at present seven) simple hospitals, where the patients are treated with a standard cure consisting of three intravenous injections weekly of 10 cc. freshly prepared 1 per cent. solution of tartar emetic. As a rule, after about 25 injections the disease is cured; relapses are fairly common.

By this campaign, supported by government regulations aiming at the establishment of better social, economical and moral conditions, and by the R. C. mission, which is especially taking care of the children, the spread of the disease is much reduced and now easily kept within reasonable limits. Only that part of the country where primitive conditions still exist is seriously affected. W. J. Bais.

IRIARTE (David R.) & SALAS (Luis M.). Granuloma venereo. [**Granuloma venereum.**]—*Gac. Med. de Caracas.* 1928. July 15 & 31. Vol. 35. Nos. 13 & 14. pp. 204–208; 212–216. [57 refs.]

This contribution made to the 5th Venezuelan Medical Congress is virtually a text-book article in Spanish on G.V. with a very fair bibliography. The author deals with the disease historically and clinically, touches on the pathology and the unsettled question of etiology. Treatment is practically confined to the use of tartar emetic. He points out that this affection is much more widely distributed than often supposed and that the differential diagnosis, especially in mixed infections, is often difficult. In the latter part of his article he cites in some detail four cases coming under his own notice. H. S. Stannus.

GIGLIOLI (George). **Granuloma venereum—its Diagnosis and Treatment. Notes on Fifteen Cases treated with "Stibenyl" Heyden in British Guiana.**—*Jl. Trop. Med. & Hyg.* 1928. Oct. 1. Vol. 31. No. 19. pp. 245–254. With 12 figs. on 2 plates.

The interest of the paper lies in the advocacy of stibenyl Heyden in the treatment of this affection. Used with little effect by THIERFELDER and THILLOT in G.V. and adversely reported upon by a number of authors when given in leishmaniasis, the present author finds it efficient, safe and effective in antimony-resistant cases. The following is recommended:—Two courses each of seven intravenous injections with an interval of forty-five days between the courses, each course consisting of gramme 0·1, 0·2, 0·3, 0·4, 0·5, 0·6, 0·6 dissolved in 20 cc. of normal saline prepared with distilled water, the first two doses on successive days, the following on alternate days. H. S. S.

DELAMARE (G.) & GATTI (C.). Granulome périanal en plaques. [**Perianal Granulomata.**]—*Bull. Soc. Path. Exot.* 1929. Mar. 13. Vol. 22. No. 3. pp. 148–150. With 1 text fig.

The author records the case of a male Paraguayan, aged 22, who, three weeks after sexual intercourse with a woman not known to be affected, developed symmetrical ulcerative granulomatous plaques on the inner surfaces of the nates about the anus. The secretion contained no leishmania nor fungus, but, on the other hand, "Calymmato bacterium" occurs in masses together with a few "B. fusiformis" and "B. sputigenum" and many spirochaetes of refringens-balantidis and microdentium type, a few closely resembling *T. pallidum*. Inoculation into a monkey was negative. Treatment by cyanide of mercury and salicylate of bismuth internally and local applications of sub-nitrate of bismuth determined the disappearance of all spirochaetes, but no change occurred in the granulomatous plaques until the exhibition of tartar emetic by the intravenous route. After one course relapse occurred, but cure was established after a second series of injections.

H. S. S.

HANSCHELL (H. M.). **Treatment of Granuloma Pudendi by Antimony Potassium Tartrate in Glucose Solution and by Protein Shock.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1929. Jan. 30. Vol. 22. No. 4. pp. 391–394. [1 ref.]

The author's own summary of this interesting case is given below :—

"1. The ulceration of granuloma pudendi occurring in a young, previously healthy, white man, extended steadily in spite of various therapeutic measures including intravenous injections of antimony-potassium-tartrate in normal saline solution.

"2. Those injections caused more or less severe shoulder pains.

"3. Three months after the appearance of the ulcer, and when it was still extending, intravenous doses of T.A.B. vaccine and at the same time now larger intravenous doses of antimony-potassium-tartrate—but dissolved in 5 per cent. glucose solution—promptly stopped extension of the ulcer and promptly induced healing.

"4. The writer's clinical experience of the quick initiation of healing of various acute and chronic inflammations and ulcerations by intravenous dosage with T.A.B. vaccine, leads him to conclude that in this case the immediate induction of healing was mainly due to the T.A.B. intravenous protein shock.

"5. Healing continued rapidly under intravenous injections of antimony-potassium-tartrate in 5 per cent. glucose solution alone ; and towards the end, under stibamine glucoside intravenous injections alone : and was complete in twenty-two days.

"6. It is noteworthy that no pains followed on intravenous doses of antimony-potassium-tartrate in 5 per cent. glucose solution, in the same patient who had experienced pains two months previously when given intravenously much smaller (though more closely repeated) doses of antimony-potassium-tartrate in normal saline solution.

"7. The glucose solution apparently decreases the toxicity of the antimony drug and may perhaps increase its therapeutic powers.

"8. Probably also it protects the liver cells from the fatty necrosis which the larger doses of antimony cause ; a proposition based by analogy on the experimental laboratory observation and the well-known clinical experience that glucose protects the liver cells from the fatty necrosis caused by arsenic and especially by arsenobenzol compounds.

"9. Glucose apparently permits of larger doses of antimony. This has a bearing on a far larger part of the field of tropical medicine (too well known to be specified) than is comprised by granuloma pudendi.

"10. Though it is to digress, yet it is not altogether irrelevant, to point out that glucose protects the liver cells from the fatty necrosis caused by chloroform; carbon-tetrachloride is now extensively used in tropical human and veterinary medicine. Clinical observation and laboratory experiment have established that this drug causes fatty necrosis of liver cells: and DAVIS (1929) has shown that carbohydrate diet protects the liver from this harmful effect of carbon-tetrachloride. Obviously then glucose should be administered with that drug."

H. S. S.

DELAMARE (G.) & GIAGNI. Granulome inguino-scrotal à forme d'ulcère rubané. [**Granuloma Inguinale in Form of Ribbon-like Ulcer.**]—*Bull. Soc. Path. Exot.* 1929. Jan. 9. Vol. 22. No. 1. pp. 19–22.

The report on a case of granuloma inguinale which had existed 7 years, and in which the process had spread in ribbon fashion over the scrotum and inguinal region. With 80 cgm. of tartar emetic (by intravenous injection of 5 and then 10 cc. of a 1 per cent. watery solution) cicatrization was obtained in 15 days.

H. S. S.

DE ALMEIDA (Eurico). O stibosan e o granuloma venereo. (Phagedenismo de MacLéod-Donovan.) [**Granuloma Venereum treated with Stibosan.**]—*Bol. da Assist. Méd. aos Indigenas.* Loanda. 1929. Jan. Vol. 3. No. 1. pp. 60–62.

Reports the first case of G.V. noted in Angola. Treatment with "Heyden 471" resulted in complete healing in fifteen days.

H. S. S.

GAGE (I. M.). **Granuloma Inguinale. Preliminary Report on the Culture of the Donovan Body.**—*Arch. Dermat. & Syph.* 1929. May. Vol. 19. No. 5. pp. 764–768. With 3 text figs. [8 refs.] [Dept. of Surgery, Tulane Univ., New Orleans.]

The author has, he claims, succeeded in cultivating from a case of granuloma inguinale an organism having all the morphological and staining characteristics of the Donovan body as seen in smears made from the lesion, thus confirming the work of some eight other investigators. Using this organism, Koch's postulates have never been fulfilled and the etiological relationship to the disease remains unproved.

H. S. S.

CASTELLANI (Aldo) & MENDELSON (R. W.). **Remarks on the So-called "Cultures of Donovan Bodies."**—*Jl. Trop. Med. & Hyg.* 1929. June 1. Vol. 32. No. 11. pp. 148–149.

The results of investigations by these authors are epitomized as follows: In practically every case of G.V. [numbers not stated] Donovan bodies were found in scrapings; a capsulated bacillus resembling *B. lactis aerogenes* was obtained on culturing; the organism from a maltose agar culture when stained resembles the Donovan body; inoculation of cultures into laboratory animals and human beings produces an abscess, but not G.V.; vaccines prepared from the organism are useless. Donovan bodies are considered to be, like Proteus $\times$ 19 in typhus, "nosoparasites"—not the true causative organism but one so constantly associated as to have a diagnostic value.

H. S. S.

REVIEWS AND NOTICES.

MENSE (Carl). **Handbuch der Tropenkrankheiten.** [Manual of Tropical Diseases.] 3rd Edition. Vol. 5. Pt. 1.—pp. xi+846. With 362 text figs. & 2 folding & 4 coloured plates. 1929. Leipzig: Verlag von Johann Ambrosius Barth. [Paper, Rm. 90; Bound Rm. 94.]

In this volume, Helminthology (Georg STICKER, with Wilhelm SCHÜFFNER & N. H. SWELLENGREBEL) is covered in 423 pages, relapsing fever and other spirochaetoses (Heinrich RUGE) in 248, Chagas disease (Carlos CHAGAS, Eurico VILLELA & H. DA ROCHA LIMA) in 50, and yellow fever (Miguel COUTO & H. DA ROCHA LIMA) in 67. An appendix by the Editor (27 pages) deals with little known diseases.

The worm section deals with geographical distribution and development, with hosts other than man—and here *Ancylostoma braziliense* is credited to the cat but not to the dog, with habitat and damage done, and with the description of worm eggs. This section contains an excellent reproduction of Looss's well-known plate of worm eggs in which the egg of *Trichostrongylus colubriformis*, as the species is properly named on p. 336, is described as that of *Strongyloides subtilis*. Methods of mass diagnosis for hookworms by finding eggs are described. If the reviewer's "D.C.F." is faithfully carried out as advised on p. 90 in the book, it can fairly be guaranteed that eggs will be missed in all but exceptional cases. Stoll's and Willis's methods are equally inaccurately described. A consideration of anthelmintics follows and after that the worms are dealt with in detail. Infections are arranged zoologically by their agents, with little indication as to their importance to man. In outstanding type the name of the human lung fluke is given as *Paragoniums westermani* and later as *Paragonismus*, the broad tapeworm has no less than five variants, the "old-world" hookworm is nearly always referred to as *Ankylostoma duodenale* but once correctly as *Ancylostoma*. The objection to following the Rules of Zoological Nomenclature here is mentioned, but not the ruling under them (Opinion 66 of February, 1915) which should settle the matter. Under ankylostomiasis concentrative methods are again considered and again D.C.F. is so described as to make good results from it impossible, while the curious "Ersatz" for it which was tested in FÜLLEBORN's laboratory is quoted as if it were of value in estimating the worth of the technique properly carried out. Ankylostomiasis is fully considered, ascariasis and threadworm infection shortly.

After a section on the leeches follows that on relapsing fever and here, as throughout the book, the illustrations which include coloured plates are very striking. The literature, though copious, is uneven in including recent work. The book (unbound), in spite of care, has come to pieces in the reviewer's hands.

Clayton Lane.

PEKING UNION MEDICAL COLLEGE. **Laboratory Manual of the Division of Bacteriology.** Prepared under the Direction of C. E. LIM.—154 pp. With 2 text figs. 1929. P.U.M.C. Press, Peking, China. [$1·50] [Review appears also in *Bulletin of Hygiene.*]

This little book of one hundred and fifty-four pages describes the methods which are employed in the Division of Bacteriology of the Peking Union Medical College. It is the outcome of practical experience involving the examination of over thirty thousand specimens a year. As the author states in his preface, it is merely a guide to laboratory methods and does

not discuss their principles, value, limitations or clinical applications. It describes them clearly and accurately and embraces all those usu employed in a bacteriological laboratory. It is evidently not the function of the particular division to undertake the examination of blood or spleen smears for parasites of malaria or kala azar or of faeces for protozoa, for no reference is made to the methods involved. Similarly the technique of blood counting does not find a place, though that of blood grouping is dealt with. These omissions are evidently intentional, but had these subjects been included the book would have had a wider appeal, for many bacteriological laboratories have to undertake such examinations.

As regards criticisms, few can be made. It is possible that when material is to be examined for predominating organisms the necessity of studying a stained smear in addition to making cultures might have had greater prominence, while the standardization of vaccines by the opacity method might have been mentioned in place of the cumbersome and inaccurate counting of organisms, which, however, is still adhered to by the majority of bacteriologists.

The methods described are clearly set forth in numbered stages, so that users will experience no difficulty in following the technique. Owing to the fact that in Peking laboratory animals cannot be purchased, special arrangements have had to be made for breeding and a section of the book is devoted to a description of the methods which have proved to be satisfactory. The information will undoubtedly be of value to other laboratory workers who are similarly placed.

The book closes with a good index, and though applying particularly to work in Peking, will certainly prove very useful in any bacteriological laboratory.

C. M. Wenyon.

MACKENZIE (John) [M.A., M.B., Ch.B., D.P.H., Lieut.-Col., Royal Army Medical Corps.] **Army Health in India. Hygiene and Pathology.**—With a Foreword by Lieutenant-General Sir Mathew FELL [K.C.B., C.M.G., F.R.C.S., K.H.P., Director-General, Army Medical Services.]—pp. iv+158. With 6 diagrams, 9 figs., 3 plans & 2 maps. 1929. London: John Bale, Sons & Danielsson, Ltd., 83–91, Great Titchfield St., W.1. [10s. 6d.]

Colonel Mackenzie says in his preface that the history of the evolution of preventive medicine in the Army in India has not, so far, been written. Many will have read his articles in the *Journal of the Royal Army Medical Corps*, but it is pleasing to find them collected into book form. This small book might well be prescribed as compulsory reading for any officer proceeding to India on a first tour of military medical service.

J. F. C. H.